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THE PERIODIC HEALTH EXAMINATION AS A METHOD OF CLINICAL INVESTIGATION

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In 1923 I became interested in periodic health examinations and determined, for my own satisfaction, to discover whether or not such examinations were of use. In this paper I shall report certain results of my observations during the last fifteen years, stressing particularly my conviction that the periodic health examination method opens an interesting approach to a certain type of useful clinical investigation.

The beginning of the periodic health examination plan is of considerable historical interest. Lemuel Shattuck [1] of Boston, schoolmaster and visionary, deserves credit for first having promulgated it in this country. In 1850 in his famous report he recommended that individuals be encouraged to have frequent sanitary examinations made of themselves in an effort to promote their health and to prevent disease. For, said he, in the literature on health too much importance is attached to public health and too little to personal health. In order to maintain personal health, the history and condition of each individual's constitution should be studied and the character of the blood that courses in his veins should be ascertained from time to time. "Our persons should be *preserved* and *strengthened* by wise and uniform care and training. We should *cleanse* our persons by daily ablutions properly applied at suitable times and of the right kind and temperature; *strengthen* our persons, physically and intellectually by regular and progressive, not transient and excessive, exercise and labor, and should *refresh* our persons by rest and sleep, at proper times, in right places, by suitable means, and in sufficient quantities." He predicted that if careful personal sanitary examinations were periodically conducted there would be much less of the ravages of cholera, typhus and other epidemics in the community, and less also of isolated "sporadic diseases." Eleven years later Dr. Horace Dobell [2] advocated the same idea in England, and in 1900 Dr. George M. Gould [3] again put in a plea for it in the United States "as a means for adequately and scientifically conducting life." These three pioneers, however, like so many others, were never taken seriously by either physicians or laymen.

In 1913 a group of progressive business men foregathered and concluded that the periodic health examination idea not only was a good one for the client but also might be made a commercial success. At first these business men propagated the idea more effectively among the public than among physicians. But in 1922 the American Medical Association [4] became interested and appointed a committee to outline procedures and devise examination forms for the making of such examinations.

In reviewing the literature on periodic health examinations that has accumulated, one is struck by two peculiarities: the layman, on the whole, apparently can be easily interested in the plan and would like to cooperate in it; the physician, on the other hand, has been lukewarm to it, rather incredulous of its value and so far has not grasped its complete potentialities. This is in large measure due to the fact that individual physicians have but rarely taken the matter seriously.

THE METHOD OF PERIODIC HEALTH EXAMINATION

The periodic health examination technic is not difficult. It entails no more than a history of the case methodically recorded and a complete physical examination of the patient repeated at intervals as time goes on. It need include as a routine only the simplest laboratory work: a Wassermann test, urinalysis, examination of a blood smear and estimation of the hemoglobin concentration. Occasionally more complicated procedures will be required such as x-ray studies or a determination of the basal metabolic rate. Chiefly the method requires a good system of records and follow-up, reasonable clinical judgment, a great deal of patient listening and, above all, in order to make the patients return from time to time, willingness on the examiner's part to assume a vital interest in the life of the person whom he examines.

In the cases reported here, the histories and physical examinations were uniformly made on a Mayo Clinic [5] history form, and in each instance such laboratory procedures were carried out as seemed indicated at the time of any examination. The patients were followed up in different ways, mainly by personal periodic rechecking at annual intervals or less or by correspondence with patients or their friends, by correspondence with physicians or hospitals, or even through the death notice column of various newspapers. In this manner a considerable volume of material has been assembled from which to construct the life history of a group of persons from the time they were first examined until they died. Thus an effort has been made on a small

Read before the Toronto Academy of Medicine, Dec. 6, 1938.

1. Shattuck, Lemuel: Report of a General Plan for the Promotion of Public and Personal Health, Boston, Dutton and Wentworth, State Printers, 1850.

2. Dobell, Horace: Lectures on the Germs and Vestiges of Disease, and on the Prevention of the Invasion and Fatality of Disease by Periodical Examinations, London, J. Churchill, 1861.

3. Gould, G. M.: A System of Personal Biologic Examinations: The Conditions of Adequate Medical and Scientific Conduct of Life, J. A. M. A. **35**: 134-137 (July 21) 1900.

4. Proceedings of the House of Delegates, J. A. M. A. **78**: 1709 (June 3) 1922.

5. Fitz, Reginald: The Case History, in Practice of Surgery, edited by Dean Lewis, Hagerstown, Md., W. F. Prior Company, Inc. **1**: 1-12, 1926.

scale to develop knowledge regarding the clinical beginnings of a variety of fatal disorders.

There is one difficulty about the technic of the periodic physical examination which cannot be overstressed. As judged by my own experience it is well nigh impossible to train oneself to be sufficiently systematic in one's work and to be properly thorough. My own conscience is by no means clear. I can recall at least one rectal cancer that developed under observation without

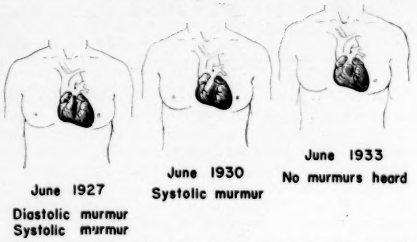

Fig. 1.—The apparent disappearance of murmurs in a patient supposed to have rheumatic heart disease.

a note as to any initial rectal examination, an ovarian tumor that grew with never a vaginal examination being reported until too late, and a neoplasm of the testis which through superficial and hasty examination was thought to be hydrocele. If one wishes to use the periodic health examination as a method of clinical investigation one must be as scientific in its use as in the use of any other research method; one must always be workman-like and painstakingly thorough lest the one important clue to the early manifestations of a disease be unrecognized through carelessness.

THE COMMON CAUSES OF DEATH IN THE UNITED STATES

Dublin and Lotka [6] have published interesting tables giving the common causes of death among the policyholders of the Metropolitan Life Insurance Company. In 1935, according to their figures, and they probably are as accurate as any, the ten leading causes of death in the United States were those given in table 1. Statistics such as these are necessarily significant to the periodic health examiner. What can be learned from the manner in which common causes of death develop that may be useful in preventing them or in mitigating their course once they have developed as a form of disease clinically recognizable?

Of heart disease there is little to be said. There were many cases of rheumatic and syphilitic heart disease and a few of congenital heart disease in this series, but the lesions were firmly established and incurable by the time the patients were first observed. In recent years, certainly, much has been accomplished to make the life of the cardiac patient longer and more useful, a good deal is being done, as Sir William Osler so fervently hoped, to jugulate syphilis and thus prevent syphilitic heart disease, but the problem of preventing or curing rheumatic heart disease still faces us. That possibly rheumatic heart disease is at times curable is suggested by the observations of Bland, Jones, and White,[7] who found in a group of 1,000 young persons with clinical signs of rheumatic heart disease that in the course of time the physical signs characteristic of valvular disease disappeared in eighty-three instances. I have occasionally encountered such cases, always an experience sufficiently impressive to discount some of one's natural pessimism concerning the incurability of rheumatic heart lesions in young persons.

A girl aged 14 years had double mastoiditis in September 1926 followed by an attack of swollen and painful joints. In May 1927 her joints again became painful, and in June, when she was first examined, the blood pressure was 105 systolic, 60 diastolic, there was a blowing systolic murmur at the apex and a low pitched diastolic murmur along the sternum. She was later examined at intervals for several years. At first there was no change in the character of the murmurs; in 1930 all that could be heard was an apical systolic murmur, and after 1933 the heart sounds appeared entirely normal. The last time she was seen was in the fall of 1938, when she appeared the picture of health and had a heart that seemed normal in every way.

What makes certain persons able to recover from heart disease?

Cancer.—Malignant disease indeed presents a bewildering problem. Table 2 illustrates the manner in which various tumors developed in patients under observation and emphasizes the difficulties entailed in early diagnosis.

To me the impressive feature of watching such cases was the apparent suddenness of onset of important symptoms. More data of this type should be recorded to confirm or refute the impression that cancer often begins its clinical course not insidiously but suddenly and that to recognize cancer early is impossible by present methods because the disease in its early stages produces no recognizable manifestations. If this is true, what is badly needed is a test for cancer analogous to the tuberculin test for tuberculosis and the Wassermann test for syphilis, by which cancer may be recognized

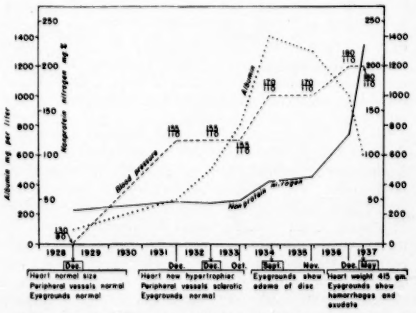

Fig. 2.—The development of cardiac hypertrophy, hypertension, peripheral vascular and retinal lesions in polycystic kidney disease.

in its preclinical state. Until such a test is developed cancer inevitably must continue to be discovered in most cases when it is already far advanced.

Accidents.—These are a constant threat. In this series two patients died from having fish bones stuck in their throats. Several found the vicissitudes of life unbearable and succumbed to self-inflicted trauma. One patient was run over, another was shot, a third was killed in an airplane crash. A man with well compensated valvular heart disease suddenly dropped dead

6. Dublin, L. I., and Lotka, A. J.: Twenty-Five Years of Health Progress, New York, Metropolitan Life Insurance Company, 1937.

7. Bland, P. B.; Jones, T. D., and White, P. D.: Disappearance of Physical Signs of Rheumatic Heart Disease, J. A. M. A. **107**: 569-573 (Aug. 22) 1936.

from the exertion of attempting to save property from his barn, which had caught on fire. A somewhat older man was driving his motor car during a bad snowstorm when visibility was poor and collided with a railroad train. Were any of these fatalities preventable? They were discouraging because they seemed so unnecessary.

TABLE 1.—*Ten Leading Causes of Death in the United States in 1935*

Diseases	Death Rate per 100,000 (Standardized for Color, Sex and Age)
1. Diseases of the heart	138.6
2. Cancer	86.8
3. Influenza and pneumonia	67.8
4. Accidents (all forms)	57.5
5. Tuberculosis (all forms)	56.4
6. Chronic nephritis	52.9
7. Cerebral hemorrhage	47.9
8. Diseases of the coronary arteries and angina pectoris	32.4
9. Diabetes mellitus	20.5
10. Appendicitis	11.5

And yet how could they have been forestalled? Even a simple clinical study of a series of fatal accidents with analysis of the patient's previous medical history and of the events leading up to death might throw important light on a public health problem of increasing magnitude.

Tuberculosis.—This is always a surprising disease. It keeps cropping up unexpectedly. Several years ago Dr. W. G. Smillie and I became interested in the problem of tuberculosis in medical students. A group of supposedly healthy students were tuberculin tested each year during their medical student life. It was surprising to see the proportion of negative reactors who became positive during that interval of time.

Having a positive tuberculin reaction is not the same thing, however, as having clinical tuberculosis. The onset of clinical tuberculosis, at least in certain instances, is strikingly acute.

In 1927 a robust looking young man went away on a vacation. He was in good condition so far as he knew. He played a violent game of tennis one morning and immediately after it began to raise large quantities of bloody sputum. Over the right upper lobe were rales and exaggerated voice and breath sounds. Roentgenograms of the chest showed marked infiltration through both lungs, suggesting an acute bronchopneumonia. The sputum contained tubercle bacilli.

To recognize the reactivation of a latent tuberculosis is a much more difficult matter:

A man aged 34 complained of a sore mouth in June 1933 which had apparently developed from bands on his teeth. Since the soreness persisted, a bit of tissue was removed from the floor of the mouth for microscopic examination. This showed no significant changes. Finally, because the symptoms continued, the sublingual glands were dissected out and proved to be tuberculous. This finding led to a chest film. There was infiltration in both lungs with lesions which appeared discrete and inactive. There was nothing in the past history to suggest when the lesion developed except that as a youngster the patient had been liable to "colds" and that he had been very ill with influenza in 1918. He was advised to take things easily for a few months until his mouth entirely healed up. He gained 20 pounds (9 Kg.) and felt perfectly well. In February 1936, having been in perfect health for a year, he began to complain of a sense of stiffness in his neck and of recurrent attacks of vertigo. Eventually these symptoms proved to be due to a tuberculoma of the left cerebellar hemisphere and to tuberculous meningitis.

When and how did the disease originally commence?

If a positive tuberculin reaction means what it is thought to mean, namely a form of tuberculosis either inactive or active within the body, we shall continue to see a great deal of tuberculosis for many years to come. In order to combat the disease most intelligently we must continue to improve methods for treating it when it is active. Also we must continue to develop methods for recognizing it in its early stages. For the latter purpose the periodic health examination method should be important. There is a vast literature on tuberculosis and its treatment after the disease has developed; on the other hand there is very little description in carefully studied cases of how it begins. A critical analysis of the mode of onset of the disease in patients studied before as well as after they fall ill would be surprisingly useful in the antituberculosis campaign.

The Cardiorenal Group Including Chronic Nephritis, Cerebral Hemorrhage and Diseases of the Coronary Arteries and Angina Pectoris.—Vascular disease in one of its various forms is by all odds the most common disease encountered in practice. Yet of its origin and early diagnosis little or nothing is known.

A man aged 48 was interested in periodic health examinations because he happened to occupy an unusually responsible position in the business world. In October 1924 he felt well. He was slightly overweight. His blood pressure was 150 systolic, 80 diastolic. The urine was normal. The heart was normal in shape as judged by ordinary physical and x-ray examinations. There were no murmurs. The eyegrounds showed nothing remarkable. The peripheral vessels were palpable and slightly thickened but were not sclerosed or tortuous.

In October 1925 he still felt well. No appreciable change in his physical condition had taken place. The blood pressure level was the same. The peripheral and retinal vessels were unchanged. The size and shape of the heart were unchanged, and the heart sounds continued to be normal. He died two months later of a sudden coronary thrombosis.

TABLE 2.—*The Onset of Cancer in Supposedly Noncancerous Persons*

Number	Age	Sex	First "Normal" Examination	Last "Normal" Examination	First Notice of Symptoms of Disease	Symptoms	Diagnosis
1	34	♀	Sept. 1929	Aug. 1937	Aug. 1937	Headache	Brain tumor
2	50	♀	June 1935	June 1936	July 1936	Tumor on forearm	Melanotic sarcoma
3	66	♂	Mar. 1925	Mar. 1926	Oct. 1927	Loss of weight (9 pounds); no symptoms	Carcinoma of colon with liver and peritoneal metastases
4	50	♂	Oct. 1927	Nov. 1931	Apr. 1932	Tenesmus and rectal bleeding	Carcinoma of rectum
5	73	♂	Mar. 1928	Mar. 1932	Oct. 1932	Bronchitis which failed to clear up	Malignant tumor in right chest
6	55	♂	June 1929	June 1930	Sept. 1930	Acute diarrhea followed by jaundice	Cancer of pancreas
7	64	♀	Sept. 1929	Sept. 1929	Apr. 1930	Tumor in breast recently noticed	Cancer of breast
					Nov. 1931	Blood tinged vaginal discharge recently noticed	Cancer of uterus
8	60	♂	Nov. 1925	Dec. 1935	July 1936	Recent swelling in scrotum	Embryoma of testis
9	48	♀	Nov. 1934	Dec. 1936	Dec. 1937	Increasing dyspnea on exertion	Malignant lymphoma
10	39	♂	Mar. 1931	Mar. 1931	Oct. 1932	Sudden painless hematuria	Carcinoma of left kidney and ureter

The widow of a patient with a similar history asked me how it is that a vigorous man in apparently splendid health can have such a frail hold on life. I wish I knew the answer.

I have made a conscientious effort to pick out even one case in which I could truthfully say that arteriosclerosis had developed under observation. I must

confess that the onset of vascular disease has seemed so insidious that it has been beyond my power to recognize it.

My nearest approach to watching the development of arteriosclerosis and hypertension was in a patient with polycystic kidney disease whose course was followed for nine years. My observations are of some interest, though I do not feel sure that they throw any light on how or why arterial degeneration develops.

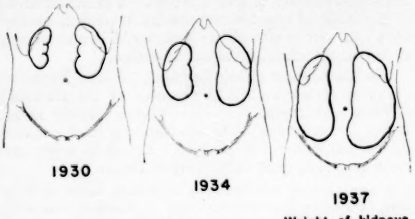

Fig. 3.—The growth of the kidneys in polycystic kidney disease.

As can be seen (fig. 2), vascular changes, hypertension, cardiac hypertrophy and retinal changes developed during the progress of a notably chronic renal insufficiency. Was the renal disease primarily responsible for the whole picture or had the patient two independent lesions, one in the kidney and the other in the vascular system?

There are several questions of this kind that can be answered only by following individual patients through all stages of vascular disease from before its beginning until its end, and this method of approach is obtainable only through the periodic health examination method. I venture to predict that if as small a group as 100 individuals were carefully studied from birth until death by the periodic health examination method, the information obtained from such a clinical investigation would throw considerable light on the early manifestations of several chronic diseases.

Diabetes.—Joslin [8] says that the date of onset of diabetes is usually indefinite. Then he adds: "It will be worth while to endeavor to learn more accurately the type of onset of diabetes. It will furnish assistance in a search for the etiology and will raise queries in the minds of the pathologists; it should indicate the character of the methods which must be adopted for prevention; it may be of value in classification and prognosis."

I can recall having seen four patients under supervision in whom diabetes developed. As in the case of cancer, in each instance I have been struck not by the indefiniteness with which the disease began but rather with its suddenness.

A man aged 30 was treated at the Peter Bent Brigham Hospital in 1921 for lobar pneumonia. During his hospital stay three samples of urine were examined, one of which contained a trace of sugar, the other two being sugar free. Six weeks later he reentered the hospital. After leaving he had felt splendid, gaining 16 pounds (7.3 Kg.) and recovering all his strength. Suddenly he developed a ravenous appetite and a marked thirst and he began to lose weight. He was then discovered to have diabetes.

A man aged 47, 6 feet (183 cm.) tall, weighed 227 pounds (103 Kg.) in July 1930. His urine was normal. The blood sugar concentration after a hearty noon meal was 0.12 per cent. In April 1932 his weight was unchanged. He was advised to lose weight lest by remaining fat he run the risk of having diabetes develop. He followed this advice for a time, so that in June 1933 he weighed 206 pounds (93.4 Kg.). The urine was sugar free and the blood concentration was 0.11 per cent. In October 1935 he returned with 6 per cent sugar in his urine and a blood sugar concentration of 0.29 per cent. A few weeks previously he had suddenly noticed a little urgency of urination, nocturia and itching of the glans penis.

A man aged 45 was studied at the Robert Dawson Evans Memorial in October 1933. His blood sugar concentration was normal in several tests and the urine was sugar free. In May 1937 he suddenly developed a ravenous appetite, began to drink a great deal of water each day and pass large quantities of urine. Now the blood sugar concentration was 0.28 per cent and the urine contained 2.2 per cent of sugar.

A woman aged 60 entered the Robert Dawson Evans Memorial in July 1936. Because she had myxedema with a basal metabolic rate of —27 per cent she was given a sugar tolerance test. This was not abnormal. She was given thyroid and in January 1937 with a basal metabolic rate of —6 per cent the sugar tolerance test was repeated and again was found normal. In January 1938 her basal metabolic rate was +10 per cent; the blood sugar concentration was 0.12 per cent and the urine was sugar free. Last July during the berrying season she suddenly noticed one day when it was warm that she could not seem to get enough to drink. The thirst persisted. Soon she found that she was becoming unusually hungry and she noticed that she was losing weight. She reentered the hospital in September with a basal metabolic rate of —8 per cent, now with 1.5 per cent of sugar in the urine and with a blood sugar concentration of 0.49 per cent.

In each of these four cases the diabetes apparently developed suddenly. It would be extremely interesting to have reported the mode of onset of diabetes in a large group of cases in which the disorder had developed under observation. As Joslin suggests, a clinical investigation of this character might well be of assistance in discovering the etiology of diabetes and might well indicate new methods for preventing the disease

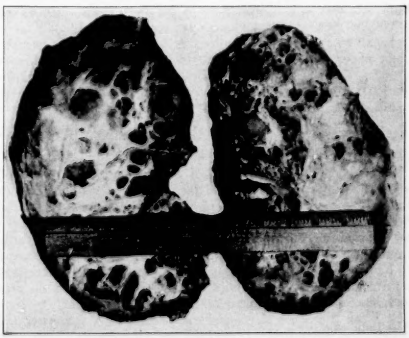

Fig. 4.—The pathologic changes of polycystic renal disease: gross appearance of kidneys; combined weight 7,500 Gm.

and for learning more of its life history. The periodic health examination offers a good method for such an investigation. Why will not some physician undertake it?

Appendicitis.—That appendicitis is an important cause of death in the United States is a great pity. Considering how much is known of the disease, of its early diagnosis and of its treatment, it seems peculiar that so many people each year should die as a result of it. One

8. Joslin, E. P.: The Treatment of Diabetes Mellitus, ed. 6, Philadelphia, Lea & Febiger, 1937.

case looms large in my mind, making me raise the question as to whether prophylactic appendectomy does not deserve a certain amount of consideration in selected cases.

A woman aged 71 wished to live comfortably as long as she could and felt that periodic health examinations might be of some use to her for this purpose. In 1927, when she was

Fig. 5.—Section reduced from a photomicrograph under medium power showing portion of pyramid. No glomeruli present. The collecting tubules are dilated and filled with polymorphonuclear leukocytes. There is an acute inflammatory infiltration of the interstitial substance. (Courtesy of Dr. Kenneth Mallory, Boston City Hospital.)

first examined, she had a considerable degree of vascular disease with tension of 190 systolic and 80 diastolic. The urine was normal. The renal function was normal. The eyegrounds showed evidence of vascular disease but no hemorrhages or exudates. In 1928, 1929 and 1930 she appeared to show no signs of wear and tear. Nothing about her general condition had changed except that she had lost a little weight in an effort to obey the medical advice given her. May 5, 1930, she seemed as well as ever. Two months later an attack of pain developed in the right lower quadrant with fever, nausea and vomiting. She did nothing about all this for three days, and then it was too late. She had a ruptured appendix with pelvic peritonitis and a terminal acute nephritis.

Could she have enjoyed life longer and more effectively had her appendix been removed before it had become acutely inflamed?

Miscellaneous Diseases.—Fifteen years' experience with the periodic health examination method is too short a time in which to draw any sweeping conclusions as to its ultimate usefulness. During this period, however, I have seen isolated examples of the beginnings of several other diseases of obscure etiology in addition to the cases cited. I believe that data obtained through the use of this method are bound to yield important results as literature on the clinical beginnings of such diseases accumulate. For instance, in this series there were three patients with dementia praecox who were observed first as well persons, then as persons who appeared peculiar but harmless and finally as persons who needed institutional care. A detailed report of a large series of such cases similarly observed would be helpful. Two cases of multiple sclerosis were followed from the time when even expert neurologists were unable to make any diagnosis until at last the classic clinical features of the disease developed. Certainly further knowledge is needed of what multiple sclerosis is and how it commences. One patient was regarded as perfectly healthy until she had what appeared to be a trivial acute infection of unknown etiology. From this beginning a progressive organic disease of the spinal cord steadily developed which the pathologist was unable satisfactorily to classify. In one patient myelogenous leukemia seemingly developed after she had been considered for several years to have polycythaemia vera, and in another acute fulminating lymphatic leukemia developed under observation. Exophthalmic goiter, gout, duodenal ulcer, gallstone disease, renal stones and fibroid tumors of the uterus have become apparent in patients without physical signs of such abnormalities when they were first examined. On the whole, it is almost certain from this short experience that, if any physician will but stop to realize that man is naturally a long lived animal with peculiar liabilities to disease, if he will be patient, if he will be methodical and accurate in his description of the phenomena he observes, he has abundant opportunity at hand to inquire into the beginnings of a variety of clinical conditions by the periodic health examination method and thus to add significantly to clinical knowledge.

HUMAN RELATIONS AND HEALTH

Finally, the periodic health examination method affords a technic for studying the very baffling problem of human relations and health. There can be no doubt that factors such as fear, worry, happiness and unhappiness influence the way people feel. By studying persons periodically and recording how their bodies react to external stimuli such as poverty, prosperity, contentment and discontentment, data may be obtained which can be expressed in measurable terms and thus be susceptible of analysis.

A patient had a gastro-enterostomy in 1920. The possible effect of social and economic misfortunes in relation to subsequent hemorrhage is shown graphically. Whatever may be the

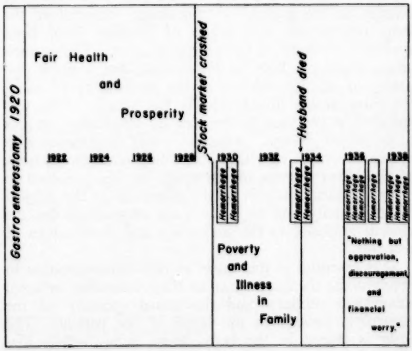

Fig. 6.—Human relations and health: The possible relation of unhappiness and poverty to intestinal hemorrhage.

underlying pathologic condition, it is a reasonable conclusion that no treatment for this patient will be successful which does not include in its program correction of aggravation, discouragement and financial worry as well as correction of any mechanical fault in the digestive tract.

CONCLUSION

On the whole, the periodic health examination method should be regarded seriously as an important tool for clinical investigation. In the light of present knowl-

edge so little is known of the mode of origin of many diseases that to expect the periodic health examination to be very useful in preventive medicine is unsound. The method, however, affords a means for studying the beginnings of a variety of disorders. Too little emphasis has been placed on the fascination of investigating how chronic disease begins. Accurate descriptions of the beginnings of all chronic disease are needed before rational preventive measures can be established.

To use the method of periodic health examination to full advantage requires the critical observation of a large group of persons over a long period of time. No one physician in his lifetime can expect to add more than a fragment of knowledge to all that can be obtained by the use of this method. Every physician, however, has an opportunity, as Sir William Osler said, to observe, record, tabulate, communicate. In this manner he has the chance to add bits of knowledge to the general fund of what little is known of the clinical beginnings of the common causes of death. The importance of the periodic health examination as a method of clinical investigation should be recognized. It should be utilized more generally.

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THE TOXIC MANIFESTATIONS OF THE THIOCYANATES

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The increasing use of the thiocyanates in the treatment of hypertension suggests the need of a statement relative to the toxicity of this drug. Heretofore the only reports on this phase of therapy have been sporadic accounts of severe intoxication. Under such circumstances it may be understood that a great disparity of opinion relative to the advisability of using the thiocyanates therapeutically has arisen. This was justified in the face of the lack of satisfactory guides to its proper dosage. After ten years' experience with cyanate therapy, carefully controlled by determinations of the blood content of the drug, we feel prepared to offer a critical analysis of the literature on the subject of its toxicity and to make some suggestions for the clinical guidance to the toxicology and therapeutics of this salt.

It is essential at the outset of this communication to reemphasize the importance of the relationship between thiocyanate toxicity and the actual quantity of the electrolyte present in the blood of the patient. The drug is stored in the body, there being widely distributed in the body fluids [1] and tissues, and its toxic action is cumulative (table 1). The content of the thiocyanate in the blood is an index of the thiocyanate content of the tissues, and this depends on the intake and the rate of excretion of the drug through the kidneys. The rate of excretion of thiocyanates from the body is extremely variable. The only correlation that we have seen between cyanate clearance and urea clearance is a rather general tendency of the former to be depressed when the latter is quite low. However, patients with normal or elevated urea clearance may also have a low thiocyanate clearance (table 2).

Since it has also been shown that the optimum "safe" level at which the blood cyanate content may be maintained seems to be between 8 and 14 mg. (the level at which the hypotensive effect of the drug is fully effective), determination of blood cyanate levels constitutes the present safest guide to dosage. In the light of this information we are able to divide the manifestations of thiocyanate toxicity into two groups: first, those toxic manifestations observed in patients whose blood thiocyanate content is within "safe" limits, though therapeutically effective, for example between 8 and 14 mg. per hundred cubic centimeters of blood; second, those toxic manifestations observed in patients whose blood thiocyanate content exceeds these limits, namely between 15 and 20 mg. per hundred cubic centimeters of blood or higher. This distinction is of the utmost importance if a true evaluation of thiocyanate therapy of hypertension is to be achieved. A careful review of the literature on this subject has disclosed no instance in which blood determinations were made with a view to controlling dosage. The maintenance dosage in our experience ranges from 0.3 Gm. (5 grains) a week to as much as 1 Gm. (15 grains) a day, depending on the patient's rate of excretion of the drug at a particular time. Fluctuations in the dosage are seen frequently in the course of therapy in many cases. It is apparent, then, that a statement by an author of the dosage of thiocyanate administered to any one patient cannot be accepted as a guide to therapy or as a criterion of the possible presence of saturation.[2]

In reviewing the reports in the literature we cannot avoid an inclination to group the toxic manifestations which the authors present in terms of our own experience. The tabular review of the literature has been subdivided into three groups according to our interpretation of the toxic phenomena reported. Those symptoms listed in the "mild" category are those which we feel secure in stating were present with blood thiocyanate levels within a "safe" range. Interpretation of those symptoms which are listed in the last column in table 3 as "severe" all fall into a second group associated with very high blood thiocyanate levels. The middle column represents symptoms which might appear in either grouping.

The most common manifestations of cyanate toxicity in the first group are sensations of weakness and fatigue. These are such frequent complaints during the early weeks of cyanate therapy (occurring in 75 per cent of the cases) that we have come to look on them as hardly toxic states. That they should be classed as such is borne out by the occasional patient in whom fatigue and marked weakness are constant complaints during the administration of cyanate, and they are relieved only by discontinuance of the drug. In most cases these symptoms disappear spontaneously from the second to the sixth week of therapy. Some of the fatigue of which the patients complain is not always due to the thiocyanate itself but seems to be due to the hypotensive effect of the drug. It is well

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1. Crandall, L. A., Jr., and Anderson, M. X.: Am. J. Digest. Dis. & Nutrition **1**: 126 (April) 1934.

2. As a guide to those interested in the use of this preparation, it has been our usual routine to administer two doses of 5 grains (0.3 Gm.) a day for three days, followed by a blood cyanate determination for patients being observed in the hospital, while for those observed only in office or clinic ten doses for a week are prescribed and a blood thiocyanate determination done on the eighth day. Reprints setting forth the simple technic of blood thiocyanate determinations may be had on request.

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known that the hypertensive patient whose blood pressure is reduced by any means whatever often complains of marked fatigue and lethargy; as the blood pressure rises toward its former level the patient again feels especially well.

This common symptom of fatigue is not a serious toxic manifestation, and it appears with blood thiocyanate concentrations of less than 8 mg. per hundred cubic centimeters. Taubmann and Heilborn [3] found that muscles of guinea pigs treated with thiocyanates showed a greater tendency to fatigue on electrical stimulation than did muscles of normal animals.

Table 1.—*Distribution of the Thiocyanate Ion in the Body Tissue* *

Tissue of	Blood Level	Liver	Lung	Kidney	Thyroid	Spleen	Adrenal	Myocardium	Skeletal Muscle
Dog 14....	19.4	0.25	0.17	....	0.22	0.21	0.33	....	....
Dog 30....	30.3	0.25	0.29	....	0.19	....	0.31	0.20	0.15
Patient L. M....	11.4	0.14	....	0.15	....	....	0.14	....	....
Patient L.	5.1	0.077 0.168†	0.078 0.272†	0.296†	....	....	0.232†	0.183†	....

* Figures for blood thiocyanate content are in milligrams per hundred cubic centimeters of the ion in the blood serum. Figures for the various tissues are in milligrams per gram of the washed whole tissue and represent the average of two or more determinations of separate samples of tissue.

† Values derived from dehydrated and defatted specimens; these are the actual figures obtained on single analysis of the organs.

Aching and even cramping in the muscles of the calf are common complaints associated with this transitory period of fatigue. As to the cause of the actual cramping in the extremities, it is suggested that this might be on the basis of a reduced circulation, as evidenced by two of our carefully studied cases presenting known peripheral arteriosclerosis, in which pain, cramps and numbness developed repeatedly in the extremities when the blood pressure fell below 160 mm. of mercury. These cramps developed with the blood cyanate below critical levels and disappeared as soon as the blood pressure reached 180 mm. of mercury.

It will be noted in table 3 that several authors have written on the increased nervousness and irritability associated with the initiation of a cyanate regimen. McNeill,[4] Ayman [5] and Pauli,[6] on the contrary, have reported on the supposed sedative action of thiocyanate and several have recorded good results in the treatment of neurasthenia and neurosis. We appreciate the fact that it is difficult to evaluate symptomatic relief of hypertensive states, but it is our feeling that patients do sleep better and are less irritable on treatment. They often report that they feel calm and quiet rather than that they have a feeling of constant drive and anxiety. Many patients feel actually sleepy while taking cyanates. This is often associated with the fatigue state previously mentioned. These conditions are noted even though there is no immediate drop in blood pressure. Nichols [7] also commented that there was a marked relief of nervous symptoms, but he did not believe that this was a true sedative action.

Toxic dermatitis, about which much has been written, has been encountered only six times in our series of patients with controlled blood cyanate levels. This has taken the form of a maculopapular itching, scaling eruption which is poorly defined, appearing usually on the flexor surfaces of the wrists and forearms or on the lower third of the leg. Occasionally the rash is seen on the face, around the corners of the eyes and lips or over the scapular region. We have never found this to be of serious consequence; it causes little discomfort to the patient and has disappeared on withdrawal of the drug. In most cases we have been able to resume the drug after the dermatitis has disappeared, and there has been no recurrence of the rash. On one occasion the rash did appear the second time but it did not recur on subsequent administration. Only one patient has shown a dermatitis which has recurred on the third attempt at renewal of the drug. Although recognizing that dermatitis is customarily one of the toxicoses resulting from overdosage, we are inclined to classify it in the mild group. The reports in the literature describe severe exfoliating forms of dermatitis with fever, edema of the face and marked general symptoms of intoxication. This may be the result of excessive dosage, but we have not encountered any such severe reaction.

The goiter which occasionally appears seems to correspond to the thyroid enlargement observed by Chesney, Clausen and Webster [8] in rabbits fed a diet of cabbage. Clinically it appears as a benign enlargement of the gland, usually diffuse, with normal or slightly lowered metabolic rate. In one case which was of nodular form there appeared to be a rapid enlargement of a small adenoma which had been present for many years. We have had no opportunity to study these glands pathologically. Enlargement of the thyroid has appeared only after long continued administration of cyanate and with blood values constantly in the lower brackets, and it decreases with feeding of thyroid.

Table 2.—*The Wide Individual Variation in Renal Thiocyanate Clearance, the Lack of Relationship Between Blood Thiocyanate Level and Thiocyanate Clearance and the Marked Difference Existing Between Thiocyanate and Renal Urea Clearance* *

Case	Sex	Age	Type of Case	Urea Clearance, per Cent	Thiocyanate Clearance, Cc. per Minute	Thiocyanate Blood Level, Mg. per Cent
1	♂	35	Normal	85	3.50	5.70
2	♀	35	Normal	77	1.9	3.80
3	♂	50	Superhypertension	108	0.62	4.70
4	♀	68	Hypertension, cardiac decompensation	44	0.32	5.20
5	♂	55	Chronic nephritis, advanced	31	0.31	17.1
6	♂	31	Chronic nephritis, advanced	5.5	0.02	11.4
7	♂	50	Hypertension	72	0.32	16.2

* It will be noted however that, although a high urea clearance may be accompanied by a low thiocyanate clearance, the latter is consistently low when the urea clearance is low.

The degree of severity of the various gastrointestinal disturbances may well be an index of the height of serum thiocyanate. Mild gastrointestinal complaints do occur, however, with the usual therapeutic levels. These usually consist of pyrosis, abdominal discomfort, anorexia, nausea and, rarely, vomiting. Above the safe blood level, gastrointestinal disturbances consisting mainly of nausea and vomiting are among the first signs of thiocyanate toxicity. Severe diarrhea, much

3. Taubmann, Gert, and Heilborn, Rudolf: Arch. f. exper. Path. & Pharmakol. **152**: 250, 1930.
4. McNeill, J. F.: Psychiatric Quart. **7**: 254 (April) 1933.
5. Ayman, David: Exfoliative Dermatitis from Potassium Thiocyanate, J. A. M. A. **93**: 1671 (Nov. 23) 1929.
6. Pauli, Wolfgang: München. med. Wchnschr. **1**: 153, 1903.
7. Nichols, J. B.: Am. J. M. Sc. **170**: 735 (Nov.) 1925.
8. Chesney, A. M.; Clausen, T. A., and Webster, Bruce: Bull. Johns Hopkins Hosp. **43**: 261 (Nov.) 1928.

abdominal pain and cramping may occur independently or as part of a general extreme toxic state. However, we have seen this only twice in ten years. In normal dogs fed toxic doses of the drug over a comparatively long period there always develops severe bloody diarrhea with associated dehydration.

It is well to point out at this time that some hypertensive persons display rather marked gastrointestinal symptoms, as already described, as part of the hypertensive syndrome, which go away with reduction of the blood pressure. These are to be distinguished from

The dogs in our experimental series, slowly intoxicated over a long period of time, showed first loss of weight progressing to marked emaciation; secondly, anorexia and diarrhea of a bloody type developed with marked signs of dehydration. Later spasticity of the hind legs developed, associated with marked weakness. The dogs that did not die from marked inanition developed severe generalized convulsions with marked opisthotonos and died in twenty-four hours. Blood studies that were made during this period showed a severe depression of certain of the blood elements.

TABLE 3.—*Interpretative Tabulation of Toxic Manifestations of the Thiocyanates Recorded in the Literature*

Author	Mild	Mild or Severe	Severe
Nichols, J. B.: Am. J. M. Sc. **170**: 735 (Nov.) 1925	Increased nervousness	Nausea, gastrointestinal disorders (reported from literature), vomiting, abdominal pain	Report of 3 deaths from the literature
Westphal, K., and Blum, R.: Deutsches Arch. f. klin. Med. **152**: 331, 1926	Weakness, fatigue	Gastrointestinal upset, dermatitis	
Takacs, L.: Ztschr. f. d. ges exper. Med. **50**: 432, 1926	.....	Dermatitis	
Smith, A. G., and Rudolph, R. D.: Canad. M. A. J. **19**: 288 (Sept.) 1928	Weakness, fatigue	Nausea	
Gager, L. T.: J. A. M. A. **90**: 82 (Jan. 14) 1928	Weakness	Cutaneous rash	
Behrens, H. O.: Arch. f. exper. Path. u. Pharmakol. **131**: 255, 1928	Weakness, depression		
Weis, C. R., and Ruedemann, R.: J. A. M. A. **93**: 188 (Sept. 28) 1929	.....	.....	Diffuse exfoliative dermatitis (1 case)
Palmer, R. S., and Sprague, H. B.: M. Clin. North America **13**: 215 (July) 1929	Weakness (in 2 cases)	.....	Angina (in 2 other cases)
Logefell, R. C.: Minnesota Med. **12**: 151 (March) 1929	Weakness, increased nervousness	Diarrhea, dry skin	Edema of lids, dermatitis
Ayman, D.: J. A. M. A. **93**: 1671 (Nov. 23) 1929	.....	.....	Generalized dermatitis; edema of lids (1 case)
Palmer, R. S.; Silver, L. S., and White, P. D.: New England M. J. **201**: 709 (Oct. 10) 1929	Weakness	Exhaustion	Precordial distress or angina
Tyrrel, J. D.: Canad. M. A. J. **22**: 80 (Jan.) 1930	.....	.....	Severe exfoliating dermatitis, fever, edema of face, loss of hair (reports 1 case)
Borg, J. F.: Minnesota Med. **13**: 292 (May) 1930	"Unpleasant symptoms"	Pruritus	Psychosis (disorientation, mania, hallucinations, confusion, persecutory ideas)
Maguire, L. M.: U. S. Vet. Bur. M. Bull. **6**: 978, 1930	Weakness (in 1 of 4 cases)		
Fineberg, M. H.: J. A. M. A. **94**: 1822 (June 7) 1930	Weakness		
Saleeby, P. F.: New Orleans M. & S. J. **83**: 93, 1930	.....	.....	Severe dermatitis, coronary and mesenteric thrombosis (death)
Ayman, D.: J. A. M. A. **96**: 1852 (May 30) 1931	Drowsiness, weakness	Mental and physical retardation, cramps, diarrhea	
Menkins, J. C., and Scriver, W. de M.: Canad. M. A. J. **25**: 285 (Sept. 31) 1931	.....	.....	Excitement, disorientation (1 case of 7)
Egloff, W. C.; Hoyt, L. H., and O'Hare, J. P.: J. A. M. A. **96**: 1941 (June 6) 1931	.....	Nausea, vomiting, diarrhea, nervousness, apprehension, tinnitus, gastrointestinal distress	Disorientation
Healy, J. C.: New England J. Med. **205**: 581 (Sept. 17) 1931	.....	.....	2 deaths in 4 cases; weakness, delirium, coma
Goldring, W., and Chasis, H.: Arch. Int. Med. **49**: 321, 1932	.....	Nausea, muscular fatigue, vomiting	Confusion, disorientation, hallucination, motor aphasia, dermatitis; 2 deaths
Palmer, R. S.: Am. J. M. Sc. **184**: 473, 1932	Weakness, angina	Nausea, nightmares, gastrointestinal symptoms, nervousness	Vertigo, confusion, psychosis
Balatin, M. J.: Illinois M. J. **62**: 557, 1932	"Toxic effect" in 5 of 148 cases	.....	.....
McNeill, J. F.: Psychiatric Quart. **7**: 254, 1933	.....	General weakness, nausea	Collapse, unsteady gait, confusion, aphasia (2 edema of glottis)
Queries and Minor Notes, J. A. M. A. **102**: 637 (Feb. 24) 1934	.....	.....	Twitching, convulsions, urinary retention, coma, mental confusion, fever, paralysis of lower extremities
Barker, M. H.: Wisconsin M. J. **36**: 281 (Jan.) 1937	Fatigue, weakness	Nausea, anemia, goiter, dermatitis	Mental confusion, disorientation, thrombosis

thiocyanate toxicity most conveniently by determinations of the cyanate in the blood. If serum thiocyanate is within safe limits, we believe that one need have no cause to fear the presence of poisoning.

The work of Nichols [7] with animals intoxicated with thiocyanates stands as the most complete exposition on this subject to date. Using guinea pigs and dogs, and administering various dosages by oral and parenteral routes, he noted sluggishness, diarrhea, anal hemorrhage, marked loss of weight, spinal irritation, spasticity of the hind legs, general rigidity, convulsions, coma and death. The speed of the course of events roughly paralleled the size of the dose. Taubmann and Heilborn [8] noted anorexia, weakness, spastic paralysis and convulsions in their experimental animals.

These, which are to be reported elsewhere, further attest the toxic origin of the syndrome associated with the maintenance of excessive blood levels of this substance.

In the white rat, a single lethal dose injected subcutaneously produces the irritative phenomena with death in a few hours. Chronic poisoning resembles that observed in the dog. The diuresis that Nichols observed in rabbits has not been noted by us in animals, but it is of interest because of the occasional diuresis that we have observed in human beings.

Healy's [9] observations on toxicity in rabbits were similar, and he correlated them with what he observed clinically. In addition, he reported pigmentation of the

9. Healy, J. C.: New England M. J. **205**: 581 (Sept. 17) 1931.

skin and felt, because of the asthenia and hypotension in the syndrome of intoxication with this drug, that "hypo-adrenia" resembling Addison's disease must be an important factor in its production. One of his rabbits, dead of thiocyanate poisoning, had large soft adrenal glands which gave a strongly positive reaction with ferric chloride when the cut surfaces were tested for the content of thiocyanate. In an attempt to repeat this work on dogs, however, we have been unable to confirm Healy's observations on rabbits. Grossly, the adrenal glands of several dogs appeared normal. There were no chemical changes of the blood which are ordinarily associated with hypoadrenia. Adrenal tissue analyzed for thiocyanate content showed no qualitative changes that were markedly different from any other tissue. Microscopically, so far as we could ascertain, there were no abnormal structural changes.

The signs of toxicity which we shall place in the second group are those which, in our experience, have been seen only in the presence of high blood thiocyanate levels. Those toxic manifestations enumerated in the first group may, of course, appear in this group as well. Vascular collapse may or may not be associated with one or more of the other major toxic reactions. Cerebral thromboses, as reported by Barker,[10] although next in importance, are probably not primary toxic effects but are secondary to the severe vascular insufficiency resulting from a sudden and marked depression of arterial tension.

The cerebral manifestations seen following the use of potassium thiocyanate seem to be truly toxic. These appear as a rule when the level has reached 20 mg. or more per hundred cubic centimeters of blood. They are very important signs and should be watched for in all cases in which cyanate is given. The earliest sign is that of slurring speech associated with word aphasia. The patients very often do not realize that they have this difficulty and it is first noted by some member of the family. They have no other sign of toxicity although the blood thiocyanate level has always been found to be high. Later marked confusion develops and even delirium.

This type of toxic manifestation should not be confused with the cerebral symptoms that might develop in the advanced senile arteriosclerotic patient as a result of hypotension and vascular insufficiency. Among our cases is that of a Negro aged 75 years, with severe generalized arteriosclerosis and marked evidence of cerebral arteriosclerosis, including typical psychic changes. A superimposed confusional state has repeatedly developed during periods of thiocyanate therapy for a severe hypertension. This occurred in spite of the fact that the blood cyanate level did not exceed 12 mg. per hundred cubic centimeters and no blood pressure reduction was obtained.

In the whole subject of the toxicology of the thiocyanates there is perhaps a no more confused chapter than that dealing with the relationship between cardiac pain and cyanate poisoning. In addition, the importance of the related incidence of angina pectoris and hypertension must not be overlooked, since our clinical material and that of most other writers on the subject are drawn almost exclusively from the ranks of patients suffering from hypertension. In the series of 3,000 patients with cardiac disorders published by White and Jones[11] angina pectoris was present in 11.8 per cent, and 33.1 per cent of those patients had complicated or uncomplicated hypertension. Palmer,[12] Palmer, Silver and White[13] and Palmer and Sprague[14] have pointed out the apparent relationship existing between cardiac pain and the administration of the thiocyanates in the therapy of hypertension. They expressed the opinion that the thiocyanates increased the frequency of anginal attacks in patients who had previously experienced such attacks and that in others the onset of angina was initiated by the administration of this drug.

In the hope of lending some clarity to this phase of cyanate toxicology, we present herewith an analysis of the records of forty-seven unselected hypertensive patients who have been observed in our outpatient clinic over relatively long periods. We have considered all instances of precordial pain or pain in the left side of the chest, with or without radiation, as cardiac in origin. In none of these cases have other pathologic changes been demonstrated that might account for this pain. For convenience in this discussion we have grouped our patients with regard to the presence or absence of cardiac pain. Group 1 includes all patients who gave a clearly negative history of cardiac pain and in whom pain never developed while under our observation. The total number of cases in this group was twenty-seven (57.4 per cent). Group 2, totaling sixteen patients (34.1 per cent), includes those who gave a clearly positive history of pain before coming under our supervision. Group 3 constitutes patients who gave a clearly negative history of cardiac pain but in whom pain developed while under our care; of these there were four cases (8.5 per cent).

TABLE 4.—*Therapeutic Responses to Thiocyanate Therapy and to Other Treatment* *

	Thiocyanate Therapy		Other Treatment		Totals	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
No history of previous pain (groups 1 and 3)	24	100	7	100	31	100
Pain developed while being observed (group 3)	3	12.5	1	14.3	4	12.9
Complaint of pain before observation (group 2)	11	100	5	100	16	100
Pain relieved while being observed	7	63.6	4	80	11	68.75
Pain mitigated	1	9.1	0	0	1	6.25
Pain questionably relieved	1	9.1	0	0	1	6.25
Pain unaffected	2	18.2	1	20	3	18.75

* All cases in which thiocyanate was given at any time are included whether or not the level of blood thiocyanate was considered within the therapeutically (as regards blood pressure) effective range. In no case listed was blood thiocyanate ever displayed in the "toxic" range.

Table 4 presents a brief summary of the therapeutic responses of this group of forty-seven patients. The only comment that we wish to make on this group of patients, which we consider representative of the entire series of patients we have observed, is relative to the work of Palmer and his associates. Our experience seems to indicate that no patient who previously experienced angina suffered a greater degree of angina during administration of thiocyanate. While it is true that the administration of cyanate was associated with the onset of angina, the percentage of patients thus affected has been no greater than in the group treated by other means. Notwithstanding this fact, we are certain that

10. Barker, M. H.: The Blood Cyanates in the Treatment of Hypertension, J. A. M. A. **106**: 762 (March 7) 1936.
11. White, P. D., and Jones, T. D.: Am. Heart J. **3**: 302 (Feb.) 1928.
12. Palmer, R. S.: Am. J. M. Sc. **184**: 473 (Oct.) 1932.
13. Palmer, R. S.; Silver, L. S., and White, P. D.: New England M. J. **201**: 709 (Oct. 10) 1929.
14. Palmer, R. S., and Sprague, H. B.: M. Clin. North America **13**: 215 (July) 1929.

in a few cases in the last group the angina has developed as a direct result of the hypotensive effect of the drug. The patients who have been studied carefully from the electrocardiographic standpoint and who have had serial tracings made at various times before, during and after thiocyanate therapy have shown no alterations in the original configuration as a result of the therapy.

From our observations on animals and from the well documented reports in the literature on both animals and man, we do not question that coma, convulsions and death do occur as a result of thiocyanate poisoning, although we have not observed these occurrences in human beings. The mechanism of death is not known. Two possibilities seem logical: first, that ischemia of the central nervous system with subsequent thrombosis or vascular collapse may be responsible for the chain of events that follows, which may end fatally; second, that there may exist an acute poisoning of the cells of the brain and cord.

therapy. Today, after from five to ten years of constant and vigorous treatment with satisfactory blood pressure readings, they present a picture of anemia, emaciation and muscular wasting. They are constantly fatigued and have little ambition. As we have pointed out, all these things are observed in experimental animals that have been deliberately poisoned with thiocyanate over long periods of time. Similar degenerative features are also characteristic of severe progressive hypertensive vascular disease of many years' duration. This is particularly true in those who survive a vascular accident and live for years with a substantially lowered blood pressure. It is, then, possible that this picture is a manifestation of the progress of the vascular disease in a patient who many years earlier might have died of heart failure or a cerebral or coronary accident. Although the blood pressure is held in sufficient abeyance to prevent the acute catastrophe, we are witnessing the ultimate complete bodily deterioration secondary to the continued existence of

TABLE 5.—*Analysis of Deaths Recorded in Table 3, Reported to Be Result of Thiocyanate Poisoning*

Author	Dosage	Clinical Course	Comment
Lesser (1898), cited by Nichols [7]	Unknown	Suicidal attempt, death in 10 hours; no clinical course reported	Necropsy: Corrosion and hemorrhage of gastric mucosa
Kobert (1906), cited by Nichols [7]	0.3 Gm.	Convulsions	Doubtful case
Vintilesco and Popesco (1916), cited by Nichols [7]	100 Gm.??	Delirium, convulsions, anuria, cold sweats, unconsciousness, extensor rigidity of spine and neck	Necropsy: Negative except for presence of poison in tissues
Saleeby	1.5 grains t.i.d.	Severe pruritic exanthem, acute respiratory infection	Coronary and mesenteric thrombosis
Healy	1.5 grains t.i.d. (1 week) b.i.d. (4 days)	Hypotension associated with weakness which progressed to delirium, vasomotor collapse and coma, in spite of discontinuation of treatment after 11 days	Death in coma 3½ weeks after beginning treatment
Healy	1.5 grains t.i.d. (1 week) b.i.d. (3 days)	Progressive weakness, hypotension, semicoma, vasomotor failure, coma	Death after 10 days' treatment and 1 month after starting treatment
Goldring and Chasis	9.77 Gm. (total in 15 days)	Nausea, delirium, hallucinations, motor restlessness, nystagmus, convulsions, disorientation, anuria, coma (blood pressure remained high); death 66 hours after discontinuation of treatment	Necropsy: Pulmonary congestion, pericardial effusion, inactive mitral stenosis, subendocardial hemorrhages, atheroma and ulceration of abdominal aorta, nephrosclerosis and profound renal arteriolar sclerosis, cerebral edema
Goldring and Chasis	14.49 Gm. (total in 18 days)	Same as reported above	Death 6 days after discontinuation of treatment

Analysis of the eight deaths reported in the literature (table 5), which are shown in the right hand column of table 3, shows that one patient died ten hours after the ingestion of an unknown quantity of thiocyanate; another died forty hours after entering the hospital following a suicidal attempt by ingestion of a large quantity of a thiocyanate salt. A third is reported to have died twenty-eight hours after taking 0.3 Gm. by mouth. The possibility of this death being due to cyanate poisoning is remote. In the case reported by Saleeby,[15] death resulted from multiple arterial thrombosis, which might have been due to the marked hypotensive effect produced by severe poisoning, although no blood pressure studies were reported in the protocol. The remaining four deaths reported all agree in the antecedent clinical course with that described for experimental animals poisoned with thiocyanates. It appears thus far that in six of these eight deaths reported there is sufficient evidence on which to base an opinion of cyanate poisoning.

The possibility of inducing chronic poisoning by the continued use of thiocyanate over a period of years is an important question. Several elderly patients with severe grades of progressive vascular disease with hypertension, who were at first plethoric and obese and had good muscular development, were placed on cyanate the basic vascular breakdown. Younger patients with a more elastic type of hypertension and less primary degenerative disease do not seem to show this same effect.

COMMENTS

We have made an attempt to present a summary of the toxicology of the inorganic thiocyanates now being more widely used in the treatment of hypertension. That thiocyanates are toxic and, indeed, that their beneficial action in cases of hypertension depends in part on their peculiar toxicology, are extremely important facts of which to be fully aware. We have tried to differentiate those toxic signs and symptoms which might occur normally in the hypertensive person from those which occur directly as a result of cyanate intoxication. We have analyzed the literature for the purpose of interpreting toxic manifestations and even deaths due to thiocyanate poisoning.

We hope that our interpretation may serve as a warning of the dangerous possibilities as well as a useful guide to those using this drug. Most important of all is the interpretation of symptoms as they appear in the light of the level of the blood cyanates. Without blood cyanate determinations, this drug should not be used.

15. Saleeby, P. F.: New Orleans M. & S. J. **83**: 93 (Aug.) 1930.

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THE FATAL TOXIC MANIFESTATIONS OF THE THIOCYANATES

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The purpose of this report is to draw attention to the fatal toxic manifestations of the thiocyanates.

Ever since the first pharmacologic investigation of the thiocyanates in 1857 by Claude Bernard [1] there have been numerous references to the toxic properties of this drug. However, the observations of Pauli [2] in 1903 that thiocyanates were effective in reducing high blood pressure caused the use of the drug to gain favor. Untoward symptoms occurred so frequently, however, that the drug fell into disrepute until it was reintroduced in the treatment of hypertension by Westphal [3] in 1925. Since that time some investigators have felt that the thiocyanates were valuable drugs; [4] others have felt that they were not only useless but dangerous.[5]

The published work of others and personal observations would indicate that in many instances the continued administration of thiocyanates leads to lowering of the blood pressure. There is a strong impression, however, that this is a secondary consequence of the toxic effects.

At all events there is no doubt that the drug may cause untoward results. Some patients show phenomena analogous to iodism, i. e. coryza, cutaneous eruptions and even exfoliative dermatitis. The usual effect, however, is vertigo and uncomfortable weakness of the arms and legs. In a lesser number of instances mental symptoms develop; in fact, the thiocyanates may cause a toxic psychosis similar to bromide mania, with disorientation, hallucinations, mania and ideas of persecution. Finally, convulsions, coma and death may intervene. Accordingly to date the Council on Pharmacy and Chemistry [6] has advised against the use of thiocyanates. It has pointed out that the evidence for their value is far from conclusive and has stated the contraindications to their use.

The toxic effects in animals were reinvestigated in 1933 by Jahr,[7] who found that death may occur suddenly but that usually the effects develop gradually with vomiting, diarrhea and emaciation among the first signs. The animals then show weakness, unsteadiness, tremors, inability to gain an upright position after being placed on the side or back, general tonic and clonic convulsions, coma and death.

The minimum lethal dose of sodium thiocyanate varies with different animals but is usually stated to be about 500 mg. per kilogram of body weight. Nichols,[8] working with guinea pigs, found the lethal dose to range between 200 and 400 mg. per kilogram. In the same ratio, the minimum lethal dose of sodium thiocyanate for a medium sized man (weighing 70 Kg., or 154 pounds) would be from 15 to 30 Gm. (from one-half to 1 ounce).

Search of the literature reveals seven human fatalities due to thiocyanates; in three instances the drug was taken with suicidal intent and in four instances it was administered for therapeutic purposes.

Lesser [9] reported the case of a magician aged 58 who used thiocyanate to convert iron-containing water into "red wine." With suicidal intent he consumed an unknown quantity of the salt dissolved in beer. He died in about ten hours. Autopsy showed corrosions and hemorrhages of the gastric mucosa, and traces of potassium thiocyanate were demonstrated in many of the viscera.

Kobert [10] described the case of a woman who, after taking ammonium thiocyanate 5 grains (0.3 Gm.), had convulsions and died in twenty-eight hours. The amount of the drug seems entirely insufficient to produce any material effects. However, perhaps the statement of the amount taken was erroneous.

Vintilesco and Popesco [11] have recorded the case of a man aged 27 who after the ingestion of 100 Gm. of ammonium thiocyanate had a toxic psychosis with extreme cerebral agitation, delirium, occasional convulsions and finally death. Autopsy was negative except that numerous organs gave strong reactions for the presence of thiocyanate.

Healy [12] reported the case of a woman aged 67 with hypertension and generalized arteriosclerosis. Before treatment the blood pressure was 205 mm. of mercury systolic and 100 diastolic. She received potassium thiocyanate 5 grains (0.3 Gm.) three times a day for one week. The dose was then decreased to 5 grains (0.3 Gm.) twice a day. On the tenth day there was marked weakness and the blood pressure was 145 mm. of mercury systolic and 90 diastolic. The drug was stopped but the symptoms progressed; the patient became profoundly weak, finally semicomatose, and died in shock nineteen days after the discontinuance of the drug. Autopsy was not performed.

Healy [12] also reported the case of a woman aged 63 with hypertension, the blood pressure being 200 mm. of mercury systolic and 120 diastolic. Potassium thiocyanate was administered as in the previous case. On the tenth day the pressure had dropped to 170 mm. of mercury systolic and 88 diastolic, but the patient felt worse than she had before the drug was given. The medication was stopped, but weakness, delirium, coma and shock ensued and the patient died two weeks after the drug was discontinued. Autopsy was not performed.

Goldring and Chasis [13] reported the case of a woman aged 40 who received potassium thiocyanate for hypertension in a dosage of 10 grains (0.652 Gm.) daily. On the fourteenth day the patient was nauseated and weak. On the fifteenth day she was confused and her speech was incoherent. Administration of the drug was accordingly discontinued, a total of 9.77 Gm. having been given in fifteen days. The blood pressure continued to be high, and the following day the patient was violently delirious with hallucinations of sight and hearing, extreme motor restlessness, nystagmus and frequent convulsive movements of the extremities. She

From the Department of Medicine of Cleveland City Hospital and Western Reserve University School of Medicine.

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was completely disoriented, continually muttering and thrashing about so violently as to require mechanical restraint. During the last twenty-four hours she voided almost no urine and became profoundly stuporous. Death occurred sixty-six hours after the thiocyanate had been discontinued. Even on the day of death the blood pressure had not dropped. At autopsy the lungs showed congestion, there was a pericardial effusion, cardiac hypertrophy and an inactive mitral stenosis, the kidneys showed nephrosclerosis with profound arteriolar sclerosis, and the brain was edematous.

Goldring and Chasis [13] also reported the case of a woman aged 56 who, because of hypertension, received potassium thiocyanate in a daily dose of 12 grains (0.805 Gm.) a day. After taking a total of 14.9 Gm. in eighteen days she complained of nausea. The thiocyanate was immediately discontinued, but forty-eight hours later nervous manifestations almost identical with those described in their other patient developed. This state persisted six days before death occurred. Autopsy was not performed.

This communication records another death from potassium thiocyanate and has added interest in that the level of the blood cyanates was controlled. The danger of potassium thiocyanate therapy becomes more apparent when it is realized that untoward symptoms occurred while the blood cyanates were at a supposedly nontoxic level.

REPORT OF CASE

B. W., a Negro woman aged 71, admitted to the Cleveland City Hospital Oct. 5, 1936, complained chiefly of headache. She had had increasing hypertension and progressively severe headaches since 1930. On examination the patient was well developed, well nourished and neither acutely nor chronically ill. She weighed 57 Kg. (125 pounds). The ocular fundi showed marked vascular sclerosis but no hemorrhages. The heart was slightly enlarged; there was a systolic murmur at the apex. Neurologic examination was negative.

The leukocytes, erythrocytes and hemoglobin were normal; urinalysis gave negative results. Reactions to the Wassermann and Kline tests were negative. The level of the blood urea nitrogen was 12.3 mg. per hundred cubic centimeters. A concentration test showed the urine to have a maximum specific gravity of 1.022; a dilution test showed a minimum specific gravity of 1.003. The electrocardiogram showed left axis deviation. Numerous blood pressure readings averaged 250 mm. of mercury systolic and 120 diastolic.

Beginning Oct. 8, 1936, the patient received potassium thiocyanate 5 grains (0.3 Gm.) daily. The blood cyanates rose from zero to 3.8 mg. per hundred cubic centimeters on October 13. The following day the potassium thiocyanate dosage was increased to 5 grains (0.3 Gm.) twice a day. October 19 the blood cyanates were 10.1 mg. per hundred cubic centimeters. The blood pressure had not fallen; in fact, on that particular day the systolic value was 300 mm. of mercury.

The dosage of potassium thiocyanate was raised to 5 grains (0.3 Gm.) three times a day on October 20. The following day the blood cyanates were 13.6 mg. per hundred cubic centimeters and it was noted that the patient was agitated and apprehensive at times. The next day she was definitely psychotic, being noisy, excited, resistive and restless. She had delusions of persecution and various sorts of hallucinations. The potassium thiocyanate was discontinued, the patient having received a total of 135 grains, or 9 Gm., of the drug in fifteen days.

The next day, October 23, the blood cyanate level was 18.7 mg. per hundred cubic centimeters. The blood pressure had not fallen. The patient was still noisy and mentally confused and required restraint. There was little change the following day, the patient muttering incoherently, making convulsive movements of the extremities and refusing food. October 25 the blood cyanates had fallen to 15.6 mg. but the patient showed no improvement. She received food and fluids by means of stomach tube and hypodermoclysis.

During the next four days the patient's condition changed but little. October 29 the cyanates were 9.4 mg. per hundred cubic centimeters of blood. October 30 the patient passed into coma and died. Death occurred nine days after the onset of the psychosis and eight days after the discontinuance of the thiocyanates. Terminally there was clinical evidence of bronchopneumonia at the base of the right lung. No dermatitis was noted at any time.

AUTOPSY

External examination revealed no abnormality. On section the viscera were found to be normally placed. The heart weighed 425 Gm. Except for hypertrophy there were no abnormalities. The aorta showed moderate arteriosclerosis. The lungs showed hyperemia and edema. There was a patchy bronchopneumonia in the right lower lobe posteriorly. The kidneys weighed 110 Gm. apiece and showed arteriolar nephrosclerosis of moderate severity. The brain was completely normal externally, and on section there were no areas of encephalomalacia, hemorrhage or glial proliferation. The cerebral arteries showed slight to moderate arteriosclerosis. The remaining viscera showed no abnormalities.

Microscopic examination of the various viscera confirmed the diagnoses made on gross examination. There was generalized arteriolar sclerosis of moderate severity.

COMMENT

The observations of others and the case here reported indicate that the thiocyanates possess considerable potential toxicity. In general, from experiments on animals and from a study of human fatalities it can be said that death due to the thiocyanates is preceded by a rather characteristic train of symptoms and signs. In animals this consists of intense irritation of the spinal cord; in human beings there is in addition an associated toxic psychosis.

The case here described presented manifestations similar to previous human fatalities and comparable to those described in animals. The patient showed mental and physical excitement, delusions of persecution, disorientation, hallucinations, confusion and convulsive movements of the extremities. Finally coma and death occurred. The pathologic examination gave similar results to those of the three previously reported autopsies on patients who had died of thiocyanate poisoning in that there were no characteristic anatomic changes.

The case is especially instructive in that the psychosis began when the blood cyanate level was 13.6 mg. per hundred cubic centimeters. During the psychosis the highest value of the blood cyanates was 18.7 mg. per hundred cubic centimeters and this had fallen to 9.4 mg. the day before death.

It has been stated by Barker [4] that the "optimum therapeutic level would seem to range between 8 and 12 mg. [of cyanates] per hundred cubic centimeters of blood" and that "significant toxicity begins to appear at from 15 to 30 mg." Barker found that "toxicity increased rapidly above the blood cyanate level of 20 mg. but that serious manifestations were not noted until levels of from 35 to 50 mg. were reached."

This case indicates that the blood cyanate level cannot be completely relied on as an indicator of the point at which toxic manifestations may appear. In this patient, toxic manifestations appeared when the blood cyanates were at a supposedly nontoxic level. Apparently certain persons, for reasons which are not clear, show an idiosyncrasy to the cyanates and have little if any margin of safety between the therapeutic and the toxic dose. Since such instances of intolerance to the drug cannot be recognized in advance, use of the thiocyanates, even when controlled by determinations of the blood level, must be considered dangerous.

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SUMMARY

This case presenting fatal toxic manifestations of the thiocyanates is especially significant in that untoward symptoms occurred while the blood cyanates were at a supposedly nontoxic level. Death was apparently due to an idiosyncrasy to the drug, and, since such intolerance cannot be recognized in advance, thiocyanate therapy must be considered dangerous.

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CROSS INFECTION IN PNEUMOCOCCIC PNEUMONIA

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Pneumonia presents another instance in which medical science is attempting to prevent disease before its pathogenesis is clearly understood. The cause of lobar pneumonia was discovered many years ago. Not only have recent bacteriologic and immunologic studies of the pneumococcus and its products made possible a much better understanding of the pathologic picture but, in the field of therapeutics, results have been so promising that already attention is being focused on the prevention rather than the treatment of the disease. Yet, despite these advances in our knowledge, no accurate information exists as to how the disease is contracted. Hence prevention for the present must be largely empirical.

As with many other diseases of the respiratory tract, the high incidence of morbidity during the colder months of the year has long been noted. Obviously this exciting cause does not suggest any angle of attack. For many years lobar pneumonia was considered a primary disease. Recently, however, it has been found on careful study that in a majority of instances a cold or infection of the upper respiratory tract precedes pneumonia. Here the approach to the problem of prevention resolves itself into one of mass policing or mass education as to general hygienic principles.

From the standpoint of etiology, two reservoirs of infection present themselves: patients and carriers. Pneumonia has long been classed as a contagious disease, yet it is rarely a reportable disease and the general failure to segregate or isolate patients with pneumonia implies that its contagiousness may be either underestimated or even mythical. In the midst of a pneumonia program at the Cincinnati General Hospital the importance of the patient as a source of infection was emphasized by several incidents, always by implication but with sufficient force to preclude the ignoring of this factor in the control of the disease. We are therefore reporting in some detail several series of cases.

In the course of studies [1] of the diagnosis and treatment of the pneumonias according to types, conducted at the Cincinnati General Hospital during the past three years, those in attendance were so impressed by the fact that cross infection occurred in the open wards that now all pneumonia is treated as though contagious. Occasionally members of the family of a patient afflicted with pneumonia contracted the disease. Careful scrutiny of the data gathered brought out some interesting features concerning epidemiology.

Unless pneumococci are identified by type, such studies as these cannot be made, as any suspected cross infection must be verified by a homologous invasion in all those concerned. In presenting the contagious aspect of the disease, certain arbitrary categories, into which the cases fall, have been set up: Category 1. Epidemics in dormitories. Category 2. Disease contracted in the hospital: (*a*) patient to patient, (*b*) patient to doctor and (*c*) in the laboratory. Category 3. Disease contracted within the family (in the home): (*a*) simultaneous infection, (b) patient to nurse and (*c*) from a family carrier.

CATEGORY 1: EPIDEMICS IN DORMITORIES

During the peak of the economic depression there existed in Cincinnati two bureaus for the care of homeless men, one for the local inhabitants and a federal one for transients. The inmates, ranging in age from 16 to 55 years, slept in large dormitories. Overcrowding was one of several unfavorable factors, for the buildings were merely lofts made ready for emergency use. Epidemics of type I pneumonia were encountered in each dormitory as shown in table 1.

It is noteworthy that the outbreaks occurred in the two buildings, at some distance from each other, suddenly and at about the same time and that the epidemics stopped equally suddenly. Two deaths occurred in each group. All patients were received and treated at the Cincinnati General Hospital.

The following November there was another outbreak at the Federal Bureau, Armleder Building. There were in residence at the time several hundred men. Within one month nine patients were admitted to the hospital, as shown in table 2. Of this group, all recovered. It is of interest that patient 50 was admitted in both the February and the November outbreak from the same dormitory with the same type of the disease.

Unfortunately many valuable data are missing. The proximity in the dormitories of one person to another is not known, nor is information available as to the number of carriers of type I pneumococci among the inmates. The actual number of men who had infections of the upper respiratory tract is not known, but that many had colds is definitely established. This agrees with the observation of Smillie,[2] who found that colds may be a factor which determines the transfer and establishment of type I and type II pneumococci from the infected to the uninfected.

CATEGORY 2: DISEASE CONTRACTED IN THE HOSPITAL

A. *Patient to Patient.*—We have abundant evidence that hospital contacts are frequently infected from pneumonia sufferers. In Smillie's [3] studies he concluded that only about 2 per cent of the hospital contacts contracted the homologous disease. This of itself would justify segregation of infected persons. In table 3 are listed all the patients treated in the medical wards of the Cincinnati General Hospital in two years whose

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infection definitely pointed to the fact that it was contracted from another patient in the same ward who had a homologous type of pneumonia. The patients listed were all hospitalized for some reason other than pneumonia and were unfortunately infected after their admission. Thirteen were treated in the winter of 1936-1937, which so significantly emphasized the contagious aspect of the disease that a technic for isolation or segregation was soon enforced. Only two of the patients were treated in the winter of 1937-1938, a most encouraging sign that our precautions have reaped their reward.

It might be of interest to report that in the winter of 1936-1937, when thirteen patients with cross infection were encountered in the medical wards, there were also five patients with pneumonia who had been admitted to the hospital for other illnesses but whose pneumococcic infection could not be traced to any other patient.

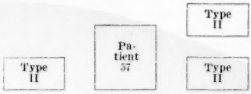
The following winter, 1937-1938, after rigid precautions had been enforced and when only two patients had pneumonia which could be attributed to cross infection, there were just two patients with pneumonia which developed in the medical wards whose infection could not be accounted for.

TABLE 1.—*Local Inhabitants, Laurel Street Rooming House*

Case No.	Age	Admission	Discharge	
1	41	1/12/35	2/13/35	
2	18	1/29/35	2/23/35	
3	24	2/ 8/35	2/22/35	
4	22	2/13/35	2/17/35	Died
5	16	2/15/35	3/ 9/35	
6	32	2/18/35	3/15/35	
7	35	2/19/35	3/28/35	
8	35	2/20/35	**4/11/35**	
9	47	3/ 2/35	3/25/35	
10	29	3/13/35	3/29/35	
11	28	3/18/35	3/27/35	
12	43	3/18/35	4/ 5/35	
13	18	3/21/35	4/ 5/35	
14	22	3/25/35	4/11/35	
15	24	3/29/35	4/ 8/35	
16	23	3/31/35	4/11/35	
17	18	4/ 2/35	4/ 9/35	
18	55	4/ 4/35	4/20/35	
19	22	4/ 8/35	4/21/35	
20	31	4/15/35	4/26/35	
21	39	4/15/35	5/11/35	
22	28	4/15/35	5/ 6/35	
23	49	4/22/35	5/10/35	
24	30	4/23/35	5/ 4/35	
25	43	4/29/35	5/ 4/35	Died
26	21	4/30/35	6/ 1/35	
27	21	4/30/35	5/18/35	
28	20	5/ 7/35	6/ 2/35	
Transients, Armleder Building				
29	26	2/13/35	3/ 6/35	
30	44	2/13/35	3/12/35	
31	43	2/15/35	3/15/35	Died
32	27	2/16/35	3/ 4/35	
33	34	2/18/35	3/ 3/35	
34	29	2/24/35	4/ 1/35	
35	22	2/25/35	3/11/35	
36	55	3/ 3/35	3/10/35	Died
37	17	3/ 6/35	3/21/35	
38	28	3/ 8/35	3/27/35	
39	26	3/12/35	3/22/35	
40	46	3/23/35	4/ 5/35	
41	29	3/27/35	4/12/35	
42	29	3/28/35	4/11/35	
43	35	3/29/35	4/18/35	
44	39	4/12/35	4/28/35	
45	40	4/23/35	5/ 7/35	
46	44	5/ 7/35	5/11/35	
47	38	5/15/35	5/23/35	

Space does not permit a detailed account of every case listed in table 3. Just a few of them will be briefly mentioned:

CASE 57.—W. B., a Negro aged 41 with asthma, had been in the hospital five days when he was seized with symptoms of pneumonia and his temperature rose to 104 F. He died a few days later notwithstanding the administration of 140,000 units of serum. On each side of him and in an opposite bed were patients who were seriously sick with type II pneumonia and had been in the ward with him for several days. The position of these patients is shown in the accompanying diagram.



Position of patient 57 in the ward.

Not all the patients who contracted pneumonia in the ward were as completely surrounded as this one by patients harboring the type of organism that proved to be the infecting agent, but perfect isolation was not in practice and the same nurses and physicians were in attendance on all. As the diagram indicates, extra beds were placed down the center of the wards in order to accommodate more patients during the heavy service of the winter months. The ward capacity was thus increased 15 per cent. This represented overcrowding, as the wards were not designed for the extra number. As all medical patients are cared for in the open wards of a general hospital, it was decided that the overcrowding meant an undue hazard for cross infection and the custom is no longer permitted.

TABLE 2.—*Second Epidemic of Type I Pneumonia Among Transients at the Armleder Building*

Case No.	Age	Admission	Discharge
48	54	11/ 9/35	11/20/35
49	39	11/20/35	12/ 4/35
50	28	11/23/35	12/ 4/35
51	41	11/30/35	1/16/36
52	37	12/ 2/35	12/16/35
53	51	12/ 3/35	12/16/35
54	27	12/ 3/35	12/16/35
55	33	12/ 8/35	12/13/35
56	66	12/13/35	1/14/36

CASE 58.—A. S., a Negro located two beds distant from patient 10, had been in the hospital thirty-three days for clinical study. The diagnosis was periarteritis nodosa. Very suddenly, five days after patient 57 was infected, the temperature rose to 104 F. and pneumonia developed. Pneumococci of type II were found in the sputum. He died within fourteen hours, although he was given serum immediately.

CASE 59.—C. P., a white youth aged 18, who contracted two infections while in the ward, was admitted to the hospital Dec. 21, 1936, with a diagnosis of acute rheumatic fever with myocardial and endocardial damage. His temperature, due to rheumatic fever, gradually returned to normal and remained so for twenty-one days. Otitis media then developed, followed two days later by pneumonia, with a temperature of 105 F. Type II pneumococci were found in the sputum. With homologous serum good results were promptly obtained. After eight days his temperature rose again, his condition became much worse and examination of the sputum revealed type III and type II pneumococci, with a preponderance of the former. The patient recovered. In the same ward at this time and close by were two patients with type II and two patients with type III pneumonia. The order of infection in this intsance is most striking and leaves little doubt that patient 59 was infected twice from patients already sick with the disease.

While cross infections have been due, in the majority of cases, to type I and II pneumococci, instances were encountered in which other types have been responsible:

CASE 60.—O. H., a white woman aged 62, admitted to the hospital Dec. 31, 1936, suffering from bronchial asthma, Jan. 7, 1937, suddenly showed alarming signs of pneumonia and died five days later. There were three other patients with type III pneumonia in the ward at the same time, one directly opposite her. These three patients had had their infections for several days prior to the onset of the disease contracted in the ward.

CASE 61.—S. H., a white woman aged 65, admitted to the hospital Dec. 14, 1936, with a diagnosis of diabetes and myocardial failure, Jan. 10, 1937, suddenly showed severe symptoms of pneumonia. Type VII pneumococci were found in the sputum. There was another patient in the ward at this time, two beds distant, who had a type VII infection. She had been admitted January 5.

CASE 62.—W. O., a white man aged 47, admitted to the hospital Sept. 18, 1936, for a malignant growth in the abdomen, contracted type VIII pneumonia October 29, with severe bacteremia. Five days previously, October 24, a patient had been admitted to the same ward seriously sick with type VIII pneumonia. One other patient with type VIII pneumonia was in the ward at this time.

In these cases and in the cases cited in table 3, infection could be traced to a patient in the ward who had primary pneumonia of a homologous type.

B. *Patient to Doctor.*—The following case is illustrative of infection from patient to doctor:

CASE 63.—E. G., a white man aged 26, an intern in the medical service, who had an acute exacerbation of chronic sinusitis, Oct. 2, 1936, first examined and administered serum to a moribund patient with type I pneumonia. During the procedure the patient coughed in his face. One week later, October 9, he showed severe signs of pneumonia found to be due to type I pneumococci. He made an uneventful recovery. During the interval of a week he had examined no other patient with pneumonia.

In this instance a conjecture as to the incubation period could be made. In the other cases cited this important period was ill defined. Apparently it must vary for the different types and the same types under varying circumstances.

C. *In the Laboratory.*—That those working with infectious material in the laboratory must be constantly protected seems self evident. Two instances of infection contracted in this manner are of interest:

CASE 64.—C. D., a woman aged 29, a laboratory technician, early in September was testing some type I antipneumococcus serum for mouse protection titer. She was suffering severely with hay fever at the time and, owing to the necessary frequent use of handkerchiefs while at work, was probably careless in her technic. She suddenly showed symptoms of otitis media. Type I pneumococci were recovered from the exudate.

CASE 65.—E. F., a woman aged 32, a laboratory technician, who showed signs of acute lobar pneumonia due to type VII pneumococci, March 28, 1936, for one week had had a cold involving especially the trachea. Three days before the onset of pneumonia the gas was temporarily turned off in the laboratory and for a brief time the sterilizing of equipment and instruments was neglected. She recalled that she had thoughtlessly handled instruments which had been used on a mouse infected with type VII pneumococci and without washing her hands had been putting cough lozenges in her mouth. Her recovery with serum was prompt.

CATEGORY 3: DISEASE CONTRACTED WITHIN THE FAMILY

It has been shown[3] that 20 per cent of immediate family contacts harbor the homologous strain in the nasopharynx. That a certain number of these carriers actually contract the disease is likewise true.

A. *Simultaneous Infection.*—

CASES 66 and 67.—G. H., a white woman aged 47, was admitted to the hospital Jan. 9, 1937, critically ill with type II lobar pneumonia. The infection was an overwhelming one, with bacteria present in the blood and spinal fluid. She had been sick for ten days and died January 11. E. H., her husband, a white man aged 48, admitted Jan. 10, 1937, with severe type II pneumonia, had been ill for one week. His infection was just as overwhelming as his wife's, with bacteremia and invasion of the spinal fluid. He died nine days later.

TABLE 3.—*Cases of Pneumococcic Cross Infection at the Cincinnati General Hospital from July 1, 1936, to July 1, 1938*

(The diagnosis given is the reason for hospitalization.)

Case	Patient	Race	Sex	Age		Hospital Day on Which Pneumonia Developed	Previous Temperature, F.	Temperature on Sudden Rise	Type of Pneumococci in Sputum	Treatment	Result
57	W. B.	N	♂	41	Cardiac failure and asthma	5th	100	104	II	Serum	Died
58	A. S.	N	♂	28	Periarteritis nodosa	33d	101	104	II	Serum	Died
59	C. P.	W	♂	18	Rheumatic heart disease and rheumatic fever	23d	Subnormal	104 Crisis	II	Serum	Recovered
					Second infection	31st	...	104	III	.....	Recovered
60	O. H.	W	♀	62	Chronic bronchial asthma	7th	98	102	III	.....	Died
61	S. H.	W	♀	65	Cardiac failure; diabetes	27th	100-98	102	VII	Serum	Recovered
62	W. O.	W	♂	47	Abdominal neoplasm	42d	98	103	VIII	Serum	Recovered
77	F. B.	W	♀	56	Syphilitic heart disease	3d	99	101	I	Serum	Died
78	D. P.	W	♀	31	U. R. I., pregnancy, six months	6th	101-98	103	II	Serum	Recovered
79	W. M.	N	♂	29	Prostatitis; cystitis	20th	Subnormal	106	II	Serum	Recovered
80	J. S.	N	♂	48	Bronchial asthma	20th	100	104	II	Serum	Recovered
81	E. C.	N	♀	44	Vincent's infection	5th	104	105	VII	Serum	Recovered
							Roentgenogram negative	Roentgenogram positive			
82	J. B.	W	♂	68	Cardial failure	11th	101	104	VII	Serum	Died
83	J. F.	W	♂	73	Cardiac failure	24th	100	103	VII	.....	Died
84	T. H.	W	♂	40	Diabetic coma	7th	98	103	VIII	Serum	Recovered
85	J. P.	N	♂	40	Meningovascular syphilis	3d	100	104	XIX	.....	Recovered

The following instance of the simultaneous infection of two elderly sisters is of unusual interest because their infections produced symptoms and signs so strikingly similar:

CASES 68 and 69.—Mrs. E. S., a white woman aged 65, a private patient of Dr. Leon Schiff, had been sick for several days. She lived alone with her sister, Mrs. H., aged 68, who ministered to her needs during her illness. Mrs. E. S. died Dec. 6, 1936. Throat swabs and blood cultures revealed an infection due to type IV pneumococci. X-ray examination showed consolidation of the upper lobe of the right lung. No sputum could be obtained. Mrs. H. fell ill December 7, and the course of her illness followed in almost every detail that of her sister. In each case the disease had to be diagnosed by means of throat swabs and verified by blood cultures and roentgenograms. Both patients had involvement of the upper lobe of the right lung, and one sister followed the other in death within a few days.

We have in our series one other instance of simultaneous infection:

CASES 70 and 71.—M. H., a Negress aged 48, and J. H., a Negro aged 42, husband and wife, were admitted to the hospital Dec. 26, 1937, with type VIII pneumonia. Both received rabbit antipneumococcus serum and both had an immediate crisis, with subsequent recovery.

B. *Patient to Nurse.*—

CASE 72.—D. C., a white woman aged 47, a nurse, admitted to the hospital, Jan. 17, 1937, with well established lobar pneumonia due to type V pneumococci, twelve days previously had

contracted a cold. Four days later she was called to nurse a patient sick with pneumonia, whom she attended for four days. The patient she was caring for was sent to the hospital January 13 and was found to have type V pneumonia with bacteremia. (In spite of serum therapy she died January 14.) The nurse made an uneventful recovery after the administration of serum. The train of events seems clear. Undoubtedly the nurse was infected by a virulent homologous organism from the patient she was attending. The incubation period would seem to have been eight days.

CASE 73.—E. L., a woman aged 50, had nursed for one day her son, aged 23, who was admitted to the hospital Jan. 20, 1938, with type II pneumonia. January 24 she had a chill, and February 2 she came to the hospital with type II pneumonia.

This case corroborates Smillie's [3] one day exposure theory.

C. *From a Family Carrier.*—It is probable that persons who have recently recovered from pneumonia may serve as carriers for a protracted period. Three patients encountered in these studies were of the immediate family of a patient who had returned from the hospital after recovery from a homologous infection:

CASE 74.—E. C., a white woman aged 54, was admitted to the hospital May 6, 1936, with a diagnosis of type I pneumonia, and was discharged May 26. Two weeks after her homecoming her husband, C. C., aged 54, was admitted to the hospital with pneumonia, also of type I.

CASE 75.—E. R., a white woman aged 44, was admitted to the hospital Feb. 26, 1936, and "signed herself out" March 16. She had type II pneumonia, and just five weeks after her return home her son, H. R., aged 16, was admitted to the hospital, also suffering with type II pneumonia.

CASE 76.—J. C., a white youth aged 20, admitted to the hospital March 23, 1938, had had a severe chill March 19. He had type XIX pneumonia of the lower lobe of the left lung. Seven days before, his child, P. C., had returned from the hospital after having the same type of pneumonia, with empyema.

These three instances immediately suggest the advisability of taking material for culture from the nose and throat of each patient convalescing from pneumonia before discharge from the hospital.

COMMENT

Physicians are, so to speak, at the halfway mark in the campaign against the pneumonias. Early diagnosis according to the specific etiologic organism and prompt administration of the specific curative serum have been conclusively shown to reduce the mortality in a most impressive manner. In the Cincinnati General Hospital in the nine years previous to the organized use of curative serum, the crude mortality rate from the pneumonias was between 30 and 50 per cent. The crude mortality rate has now been reduced to 11 per cent, and only those patients sick ninety-six hours or less have been serum treated. This figure represents an analysis of 600 cases observed during a three year period.

The 300 or more deaths from lobar pneumonia which are recorded each year in Cincinnati occur preponderantly between November and May, when most of the diseases of the respiratory tract are prevalent. When the first few cases appear we invariably stop to discuss the possible source of infection. While little is known of the incubation period of the infection and many other important features, it is reasonably sure that the disease is spread by two agents: (1) carriers of virulent type-specific pneumococci,[4] who may infect their contacts, producing either (*a*) pneumonia or (*b*) simple carriers, and (2) patients with pneumonia who infect contacts with homologous strains.

While Smillie and others have doubted the probability or likelihood that a patient with pneumonia infects another person, ample proof has been recorded to assure the fact that this happens not infrequently. Only those patients are included in this report who showed evidence of having contracted their disease by cross infection. Many others, for whom proof was not so conclusive, have been omitted. This being the case, and it seems unimportant whether the disease is highly contagious or not (tuberculosis is not), each patient with pneumonia should be regarded as a focus for the spread of the infection. The care of each patient should include those measures which have been found serviceable in the treatment of other communicable diseases.

It is essential that each patient be segregated in a cubicle and not treated in the open ward. Physicians and nurses should be required to observe the same precautions in caring for such patients as are usual in contagious disease wards. The wearing of gowns and masks and the washing of hands after each examination or treatment should be strictly enforced. Visitors to the patients should likewise be protected. Since these regulations have been adopted at the Cincinnati General Hospital, we have been convinced of their merits.

The part played by colds and other diseases of the respiratory tract, such as asthma, sinusitis and hay fever, may not be finally established. However, in these studies it was felt that colds have a definite relationship to the prevalence of homologous types of pneumococci in contacts with lobar pneumonia. This was particularly noted in the two epidemics reported in dormitories. While it may be truer of types I and II, as pointed out by Smillie,[4] it occurs with other types.

While overcrowding per se may not be a predisposing factor in the spread of pneumonia, our studies indicate that the disease exists in greater numbers under this condition. The two epidemics mentioned occurred when persons were crowded in dormitories. Only type I pneumonia was encountered in these outbreaks.

In a report which will appear later it will be shown that by far the greatest number of cases of pneumonia as well as the greatest number of deaths from the disease occur in a certain few census tracts where not only are overcrowding and economic conditions the worst in the city but also the incidence of other communicable diseases is the highest.

CONCLUSIONS

1. Pneumococcic pneumonia, a contagious disease, may infect contacts with homologous strains. This report indicates that physicians, nurses, other patients and other members of the family may be the victims.

2. Pneumococcic pneumonia should be treated as a contagious disease in the hospital and in the home and as a public health problem in the city. All cases should be reported by type.

NOTE.—In a study of the pneumonias in private hospitals, two instances were noted of a husband and wife who entered the hospital on the same day with the same type of pneumonia. In one pair the diagnosis was type I pneumonia and in the other type IV pneumonia. Another example of family infection was in a man aged 48 who entered the hospital with type I pneumonia and was followed in five days by his daughter, aged 17, with the same diagnosis. A case of type II infection was encountered in which both the sister who was nursing the patient and the doctor contracted the disease. The patient and doctor both died but the sister recovered.

4. Smillie, W. G.: The Epidemiology of Lobar Pneumonia, Reprinted from the Tr. A. Am. Physicians **51**: 407, 1936.

POSTOPERATIVE PARATHYROID TETANY

COMPLETE CONTROL OF THE MANIFESTATIONS BY MEANS OF DIHYDROTACHYSTEROL: REPORT OF A CASE

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The case of postoperative parathyroid tetany that we are reporting here merits, we believe, the attention of the practitioner because of the dramatically efficacious control of the disease effected by means of dihydrotachysterol (A. T. 10), whereas every form of treatment attempted previously was without any beneficial result. There are, moreover, few reports in the American literature dealing with the clinical use of dihydrotachysterol in the treatment of postoperative parathyroid tetany.

Despite all precautions and meticulous surgical technic, postoperative parathyroid tetany, following subtotal thyroidectomy, still occurs in about 1.5 per cent of cases. The prevailing impression that with the advent of solution of parathyroid an answer was found to the problem of controlling every case of parathyroid tetany has been shown, as in the case to be reported here, to be erroneous. Although parathyroid tetany may yield readily to treatment with adequate dosage of calcium and cod liver oil, cases occur in which there is no improvement under such treatment and among these are some which are refractory even to the addition of apparently adequate amounts of solution of parathyroid.

REPORT OF CASE

History.—A white man aged 30, married, seen July 28, 1937, complained of loss of weight, palpitation, nervousness, restlessness and insomnia. These symptoms, dating back to May 1937, began with loss of weight of slight degree at first but more pronounced in the four weeks previous to admission. Thus from an initial weight of 190 pounds (86 Kg.) in May 1937 there was a decline to 180 pounds (81.6 Kg.) in June and to 147 pounds (66.7 Kg.) in July 1937. He complained of marked nervousness and stated that he was restless and fidgety and unable to sleep. He had also become subject to palpitation and shortness of breath on usual exertion during the previous year. There were no other significant complaints. The past medical and family history were essentially negative.

Physical Examination.—The patient was well nourished and appeared extremely restless and fidgety. There was only the slightest exophthalmos but a pronounced staring expression of the eyes and somewhat increased blinking but no edema of the eyelids. The thyroid was not palpably enlarged and bruits could not be heard over it. There was marked tachycardia, the pulse rate averaging 105 per minute. The heart was normal, except for the rapid rate. The blood pressure in millimeters of mercury was 135 systolic and 65 diastolic, yielding a higher pulse pressure than normal, characteristic of hyperthyroidism. There was moderate weakness of the quadriceps muscles. Physical examination was otherwise entirely negative.

Urinalysis, determinations of hemoglobin, erythrocyte and leukocyte counts and the Wassermann and Kahn tests revealed essentially negative results. Roentgenograms of the chest revealed some cardiac enlargement but were otherwise negative. A substernal thyroid was not visualized. The basal metabolic rate on admission to the hospital was plus 93 per cent.

A diagnosis of exophthalmic goiter (diffuse hyperplasia of the thyroid) was made, and treatment with compound solution of iodine 10 minims (0.65 cc.) three times a day was instituted preparatory to subtotal thyroidectomy. The treatment otherwise consisted of rest in bed, a high caloric diet and sedatives as required.

Subsequent determinations of the basal metabolic rate yielded the following readings: August 3, after seven days' treatment with compound solution of iodine, + 65 per cent; August 9, after thirteen days of this treatment, + 65 per cent, and August 11, after fifteen days of this treatment, + 44 per cent.

Examination August 11 revealed marked lessening of the degree of thyrotoxicosis. The patient volunteered that he felt much improved; he was less restless and nervous and the pulse rate was slower. Despite the basal metabolic rate of + 44 per cent, it was felt that the clinical condition was entirely satisfactory for thyroidectomy to be performed.

Operation.—Subtotal thyroidectomy was performed August 12, the greater part of both lateral lobes being excised, leaving a small remnant of thyroid gland in the tracheo-esophageal groove on each side.

Histopathologic Report.—The specimen consisted of thyroid gland tissue in two pieces, each measuring 4 by 3 by 2 cm. The gland was firm in consistency and on being sectioned presented a somewhat beefy appearance. There were no discrete nodules. Microscopic sections revealed areas of marked hyperplasia with poorly stained colloid. The cells were of the high columnar type and, in certain areas, more than two layers deep. Other parts presented involuted areas with dilated acini, little colloid, flattened epithelium and occasional areas of lymphocytic infiltration. The histologic appearance was that of hyperplasia of the thyroid with involution.

Subsequent Course.—September 21, sixteen days after dismissal from the hospital, the patient was seen by one of us (H. M. M.), at which time the patient stated that almost immediately after he left the hospital marked tingling in the hands and feet and frequent spastic contractures of the fingers, toes and muscles of the calves of the legs developed. This occurred even at rest but was aggravated by activity. Driving an automobile had become almost impossible because of the frequent spasms of the leg muscles. He had gained 5 pounds (2.3 Kg.), slept well and felt perfectly well in every other way. The patient recalled that during his postoperative period at the hospital he had noted slight, intermittent tingling in the extremities, but those symptoms were so mild and evanescent that he did not mention them at any time.

His attending physician (G. K.), who had seen the patient because of these complaints shortly after dismissal from the hospital, diagnosed postoperative parathyroid tetany and prescribed calcium gluconate and later calcium lactate[1] in doses of two teaspoonfuls (8 Gm.) three times a day. The symptoms were not relieved, however, and the carpopedal spasm was, in fact, apparently becoming more and more pronounced.

Examination September 21 revealed no evidence of thyrotoxicosis, the staring expression was gone and there was no exophthalmos. The pulse rate was 84 per minute, the blood pressure 115 systolic, 90 diastolic. The Chvostek and Trousseau signs were markedly positive, indicative of moderately severe parathyroid tetany.

Urinalysis was negative and the blood count was normal. The serum calcium (Kramer and Tisdall method) was 9 mg. per hundred cubic centimeters of blood and the serum phosphorus (Bell and Doisy method) 5 mg. per hundred cubic centimeters of blood.

Because of the subjective and objective manifestations of tetany, despite the normal concentration of serum calcium at this time, the dose of calcium lactate was increased to three tablespoonfuls (45 Gm.) a day, and lactose in doses of 1 drachm (4 Gm.) three times a day was prescribed in an attempt to lower the phosphate level of the blood. One capsule of cod liver oil and viosterol, three times a day, was also given.

October 6 the patient reported that despite strict adherence to the prescribed therapeutic regimen he had experienced no relief, annoying and frequently severe tetany having occurred almost continuously. Examination again confirmed the existence of tetany; the Chvostek and Trousseau signs were still

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1. The calcium medication at this time and throughout the period of observation was given between meals.

markedly positive. Solution of parathyroid (Collip) was added to the previous therapeutic regimen in doses of 0.5 cc. (50 units) daily, with the suggestion that it be increased to 0.75 cc. (75 units) daily if necessary. The patient was taught to administer the injections of the solution of parathyroid himself.

Feb. 21, 1938, the patient was still complaining bitterly of the disability caused by tetany. Despite the daily use of 75 units of solution of parathyroid, plus the large doses of calcium lactate, lactose and halibut liver oil and viosterol taken, he had had, he complained, a great deal of tetany in the hands, legs and, more recently, also in the muscles of the throat and larynx. There were, in addition, pains in the muscles all over the body; he tired easily, had a tendency to drowsiness in the daytime and was gaining weight, the weight having risen from 142 pounds (64.4 Kg.) before operation to 177¼ pounds (80.4 Kg.).

Examination again revealed signs of marked tetany, with pronounced positive Chvostek and Trousseau signs. He had become quite obese and the face was pudgy. There was a distinct exophthalmos of slight degree and puffiness about the upper eyelids. There were no clinical manifestations to suggest either myxedema or hyperthyroidism, however. The basal metabolic rate at this time was minus 5 per cent. The serum calcium was 6.2 mg., serum phosphorus 5.5 mg. and blood cholesterol 200 mg. per hundred cubic centimeters of blood. A blood count was normal.

The dose of calcium lactate was increased to six tablespoonfuls and was administered in divided doses six times a day. Cod liver oil, in doses of a tablespoonful three times a day, was given in place of halibut liver oil and viosterol capsules, but since the patient did not tolerate cod liver oil well he resumed the halibut liver oil and viosterol medication after several days. He continued the ingestion of lactose and the subcutaneous injections of solution of parathyroid in doses of 0.35 cc. (35 units) twice a day.

The symptoms of tetany continued practically unabated, however, and were becoming more and more burdensome to the patient. He complained of much general weakness; in addition lacrimation associated with definite proptosis of the eyes and persistent edema of the upper lids had developed. Again there were no indications of hyperthyroidism or myxedema. The skin presented numerous dry, scaly areas over which there were numerous minute, dry, papules.

TABLE 1.—*Calcium and Phosphorus Concentration in Blood Serum Before and After Institution of Treatment with Dihydrotachysterol*

Date	Serum Calcium, Mg. per 100 Cc.	Serum Phosphorus, Mg. per 100 Cc.	Dihydrotachysterol, Daily Dose	Symptoms of Tetany
9/22/37	9.0	5.0	None	Marked
2/22/38	6.2	5.5	None	Marked
4/ 7/38	7.0	...	None	Marked
4/12/38	7.5	7.4	None	Marked
4/14/38	7.1	7.6	None	Marked
4/15/38	...	...	3 cc.	Marked
4/16 and 17/38	...	...	5 cc.	Marked
4/18/38	10.0	6.7	5 cc.	Slight
4/19/38	...	...	3 cc.	Very slight
4/20/38	10.0	7.0	3 cc.	None
4/21 and 22/38	...	...	2 cc.	None
4/23/38 8 a. m.	11.0	6.0		
4 p. m.	10.4	6.9	2 cc.	None
10 p. m.	10.8	7.2		
4/29/38	9.0	6.2	1 cc.	None
6/ 7/38	8.4	5.6	10 drops every other day	None

Owing to persistence of tetany and our inability to control its manifestations despite a seemingly adequate intake of calcium, halibut liver oil and viosterol, and solution of parathyroid, the patient was readmitted to the hospital April 5 for closer observation and for a trial of dihydrotachysterol if necessary.

While he was in bed for several days and receiving one and one-half tablespoonfuls of calcium lactate six times a day and one capsule of halibut liver oil and viosterol twice a day, as well as a low phosphorus diet, spasms of the muscles of the face, hands, feet and glottis continued. There was definite hypocalcemia and an increased concentration of phosphorus, the values ranging from 7 to 7.5 mg. of calcium per hundred cubic centimeters of blood, and of phosphorus from 7.6 to 7.4 mg. per hundred cubic centimeters of blood (table 1). After a period of ten days without any indication of the slightest improvement, treatment with dihydrotachysterol in addition to the medication previously prescribed was instituted in the dosage given in table 2.

After three days of treatment with this drug, during which time he had consumed a total of 13 cc. of dihydrotachysterol, the blood calcium concentration reached a level of 10 mg. and the blood phosphorus a level of 6.7 mg. per hundred cubic centimeters of blood (table 1). He felt much improved, there being but few symptoms of tetany.

TABLE 2.—*Course of Dosage of Dihydrotachysterol*

Date	Dosage
4/15/38	3 cc. daily
4/16 to 4/18/38	5 cc. daily
4/19 to 4/20/38	3 cc. daily
4/21 to 4/24/38	2 cc. daily
4/24 to 5/23/38	1 cc. daily
5/24/38 to date	10 drops every other day

Four days later, after an intake of an additional 15 cc. of dihydrotachysterol, he was practically entirely relieved of tetany except for slight spasm of the fingers of the right hand in the morning, on arising, this lasting but a minute or so, after which he could get around and exercise without precipitating tetany. He was dismissed April 24, entirely relieved of his tetany, taking six tablespoonfuls of calcium lactate, two halibut liver oil and viosterol capsules, and 1 cc. of dihydrotachysterol daily.

Since dismissal from the hospital he has remained entirely free from tetany and has been able to resume his former occupation. The skin has resumed a normal appearance and texture and the blood calcium concentration has remained normal, although the blood phosphorus level, when last seen, June 7, was 5.6 mg. per hundred cubic centimeters of blood. On examination he presented the faintest Chvostek reaction on both sides, which disappeared after several consecutive attempts to elicit it; the Trousseau sign was absent. He still complained of excessive lacrimation, and exophthalmos, measuring 25 mm. on the right and 26 mm. on the left, was still present. He was also found to have hyperopia with astigmatism in both eyes, for which adequate correction with glasses was prescribed.

COMMENT

Dihydrotachysterol (C_{28} H_{460}) is derived from tachysterol, a chemical fraction of irradiated ergosterol, which exerts a specific and profound influence on the concentration of calcium in the blood. It is available under the designation A. T. 10 [2] in the form of a clear oily solution which is stable indefinitely and is suitable for peroral administration. The use of dihydrotachysterol for the treatment of postoperative parathyroid tetany was introduced first by Holtz,[3] and among the clinical reports of its use are those of Snapper,[4] Campbell [5] and Arnold and Blum.[6]

Like solution of parathyroid, dihydrotachysterol causes a rise in the calcium level of the blood; but unlike the relatively transitory effect of solution of parathyroid the action of dihydrotachysterol begins more slowly and is much more prolonged, the action of a single dose extending at times over many days. Because of this prolonged action of dihydrotachysterol it has found a most useful place in the clinical management of various forms of postoperative tetany. More important still is the fact that peroral administration

2. Distributed by Winthrop Chemical Company, Inc.
3. Holtz, F.: A. T. 10: Bericht über Erfahrungen mit A. T. 10, Klin. Wchnschr. **13**: 104-108 (Jan. 20) 1934.
4. Snapper, I.: Treatment of Tetany, Lancet **1**: 728-731 (April 7) 1934.
5. Campbell, D.: Treatment of Parathyroid Tetany, Lancet **1**: 369-372 (Feb. 16) 1935.
6. Arnold, C. H., and Blum, H.: Control of Hypoparathyroidism, West. J. Surg. **44**: 546-555 (Sept.) 1936

of a small amount of the drug can, as in our case, effectually control the disturbance of parathyroid insufficiency even when all other recognized means previously available, including the use of solution of parathyroid, are entirely ineffectual. Solution of parathyroid must, moreover, be given by injection, whereas dihydrotachysterol is effective when taken by mouth. Another advantage of the latter drug is that, once the blood calcium level has been restored to normal, frequent administration is unnecessary, small maintenance doses sufficing to prevent recurrences.

In the case reported here, treatment with large doses of calcium lactate, lactose, halibut liver oil and viosterol and solution of parathyroid was without the slightest effect on the clinical symptoms. The patient's manifestations of tetany were, in fact, progressing despite these measures and he had reached a state of marked disability, not to say danger, with the appearance of spasm of the glottis, just before the administration of dihydrotachysterol was begun. By the fourth day of the administration of this drug, however, the symptoms of tetany were strikingly ameliorated and within six days all manifestations of tetany, except the slightest symptoms for a minute or so on arising, had disappeared. The rapid control of all the clinical manifestations of parathyroid insufficiency, as well as a return of the blood calcium and phosphorus levels to normal, was strikingly dramatic and most gratifying both to the patient and to ourselves. The therapeutic effect in our case was not less dramatic than that of insulin in the control of diabetes. It has been particularly gratifying to observe the continued maintenance of the improvement attained by the administration of as small a dose of dihydrotachysterol as ten drops every other day. The disappearance of the trophic cutaneous changes which had begun to appear was not only gratifying in itself but suggested also that by maintaining complete control of the parathyroid insufficiency indefinitely we might possibly also avert the development of cataracts, which otherwise appeared as another threatening menace.

Whether such perfect control of parathyroid insufficiency as was effected in our case by dihydrotachysterol can be uniformly achieved in every instance of parathyroid tetany remains to be learned from wide experience with this drug.[7]

The toxic effects of overdosage with dihydrotachysterol have been reported to be essentially the same as those of overdosage with parathyroid extract and other calcium mobilizing factors. The manifestations of overdosage are languor, anorexia, nausea and vomiting, and, if more pronounced, there appear also headache, stupor, ataxia of the lower extremities, thirst, albuminuria and exanthems. These symptoms are associated, of course, with hypercalcemia, which may range upward from 13 mg. of calcium per hundred cubic centimeters of blood. The toxic manifestations of overdosage generally yield to cessation of further administration of the drug, bed rest, a liberal intake of fluids, and laxatives. Control of the symptoms of overdosage and a return of the calcium level of the blood to normal may require a number of days. Close observation of the patient and frequent determinations of the calcium concentration of the blood at the start of treatment and at intervals thereafter are essential to avert overdosage, because the drug has some cumulative action. It is probably best to keep the calcium level of the blood at the lower border of normal; that is, between 9 and 10 mg. per hundred cubic centimeters. By careful observation and frequent checking of the calcium and phosphorus concentrations in the blood in our case we have aimed at and achieved complete control of the parathyroid insufficiency without inducing hypercalcemia and its attendant toxic manifestations.

7. Since our report was submitted for publication, MacBryde has reported seven cases in which the symptoms of tetany and the chronic hypocalcemia were controlled with dihydrotachysterol: MacBryde, C. M.: The Treatment of Parathyroid Tetany with Dihydrotachysterol, J. A. M. A. **111**: 304-307 (July 23) 1938.

SUMMARY

The case reported is one of postoperative parathyroid tetany, refractory to treatment and progressively more disabling, despite the use of large doses of calcium, halibut liver oil and viosterol and solution of parathyroid, in which the symptoms were promptly and entirely relieved and the metabolic effects of the parathyroid insufficiency were satisfactorily controlled by means of dihydrotachysterol.

The therapeutic effect of dihydrotachysterol in the control of parathyroid insufficiency in our case was not less dramatic than that of insulin in the control of diabetes.

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SYPHILIS AND THE LAW

WITH A DISCUSSION OF THE FALSE POSITIVE BLOOD SEROLOGIC TEST

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The United States, following its well known predilection, is on the edge if not actually near the crest of a wave of legislative enactment in a newly discovered though very old public health field, that of venereal disease control. It therefore behooves the physician who wishes to understand, influence and cooperate to be informed on many as yet little appreciated aspects of the problem.

THE LAW IN ENACTMENT AND IMPLICATION

Law on the question of the transmission of infectious disease rests fundamentally on police powers conveyed by the legal enactments establishing state boards of health and supported by favorable decisions in the courts on issues involving quarantine and the protection of the public against the dissemination of infection. On this broad legal base rests a structure of local ordinances varied occasionally by legislative supplements from higher sources, so to speak, as in more sweeping types of laws governing groups such as food handlers and barbers. In many instances the local ordinances thus far tend to concern themselves principally with special groups of public employees such as policemen and firemen, in whose selection and welfare the state exercises some medical power. Rules adopted by private industrial concerns would not find place among existing laws because of their lack of connection with the police power, but they have nonetheless substantial force by way of the hiring and firing or job control

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of the employable population. The most recent type of enactment, essentially a product of the widespread public agitation and interest caused by a campaign against syphilis, has taken on both a broader sweep and a more sketchy disposition of powers and responsibilities. Amateur and unguided lay legislative handiwork can easily be recognized in some of the marital and pregnancy enactments now in existence. It is not improper to point out that medical persons unfamiliar with the diseases which it is planned to control by legislation, and even public health officers in similar situations may be responsible for confusion, injustice and unenforceability in the laws or regulations to which their efforts give birth.

PURPOSES OF LEGAL ENACTMENT

All law, and public health law in particular, should be an expression of educated public demand and should arise not from waves of fear, sentiment, hysteria or propagandist activity but from the broad base of intelligent comprehension of the problem involved. Yet law may also subserve an educative function. Probably the fairest statement of a practical relationship between educated demand and educational possibilities is that a law should be drawn by educators and educated or expert persons for purposes of teaching as well as for the function of enforcement and protection. In the case of syphilis there exists a sufficient body of expert knowledge as to what constitutes public health protection and a sufficient unanimity of opinion on treatment control to make the framing of sound legislation a practicality.[1] Such a statement could hardly be made, under existing knowledge, for example, of a disease like gonorrhea or venereal lymphogranuloma.

World experience with venereal disease control by law also affords some important sidelights on the background of legislative enactment. The United States is at the moment drawing its practice largely from Scandinavian example. The Scandinavian plan of venereal disease control is probably the oldest in the world, the most thoroughly systematized, and rests on the firmest foundation of national character, national homogeneity and national intelligence of any body of health legislation in the world.[2] It is essentially an enforcement plan which takes education for granted. It is perhaps to be expected that from Scandinavian sources the legislatively minded will draw inspiration which unfortunately is not always as effective in a new milieu as its proponents expect; it is not received by nor has it the educational and constructive effect on a different type of mind that those who frame it desire. In contrast with the Scandinavian technic and reaction stand the experiences of countries like Great Britain and the Netherlands, in which law and enforcement play a negligible part. Successive surveys of the situation in Great Britain and the Netherlands have disclosed results apparently practically equal to those of the Scandinavian countries. The inference that among such peoples as the British and the Dutch practically no fabric of legal enactment is necessary to secure adequate venereal disease control, at least in the field of syphilis, is as important for us as is our Scandinavian model. While the comparisons drawn, for example, by the recent British commission under Colonel Harrison [3] between Scandinavian and Dutch-British practice lack some of the absolute control features which might be desired, particularly in the direction of a long standing statistical summarization of the years preceding active public health interest in venereal disease in Britain, and to an even greater extent in the Netherlands, it is a fair inference that figures which show an almost identical trend when placed side by side and yet which are obtained by two apparently diametrically opposite methods of approach deserve careful study by framers of syphilis laws. It is a matter for real questioning whether the patchwork population of the United States will learn more and learn it better under a régime of legislative definition and enforcement than they would under an intensive application of educational methods through the press, through medical authorities and through public health agencies, lay and official, and most of all through the educated patient himself.[4]

Since it seems for the moment almost inevitable that the legislating technic will for a time have the upper hand in this country, it may be well to indicate the principles that the law must recognize with respect to syphilis if it is to remain at all in harmony with the known practicalities of the situation, medically speaking, as well as from the standpoint of public health.

It would seem, first of all, that laws regulating the control of syphilis should take account of the enormous variability in individual cases and the positive necessity for expert medical interpretation wherever a serious question arises. Laws governing syphilis will tend to be too specific and drawn in too great detail. So far as they preserve the right of the state to allow its public health officers to decide by individual local or official regulation in a flexible manner the processes of enforcement and judgment, subject to cooperative interpretation by the court, they are likely to be good. So far as the enactments tend to define in days and weeks and to specify in degrees of positiveness and negativeness of specific tests, they will tend to run into difficulties both in the infliction of injustice on individuals and in unenforceability in the light of expert testimony in the courts. It is therefore worth while for any one who contemplates the advocacy of legislation for the control of venereal disease to read with care the model of a venereal disease control law prepared as long ago as 1921

1. See articles by:
Moore, J. E.: Treatment as a Factor in the Control of Syphilis, Ven. Dis. Inform. (supp. 3) 1937, p. 84.
Stokes, J. H.; Cole, H. N.; Moore, J. E., and others: Cooperative Clinical Group Studies in the Treatment of Early Syphilis: Clinical Manifestations and Diagnosis, ibid. **13:** 165 (May) 1932; Results of Treatment in Early Syphilis, ibid. **13:** 207 (June), 253 (July) 1932; Standard Treatment Procedure in Early Syphilis, ibid. **15:** 149 (April) 1934.
Moore, J. E.; Cole, H. N.; O'Leary, P. A., and others: Cooperative Clinical Group Studies in the Treatment of Latent Syphilis: General Considerations, ibid. **13:** 317 (Aug.) 1932; The Clinical Outcome of Treatment, ibid. **13:** 351 (Sept.), 371 (Oct.) 1932; Clinical Progression and Relapse, Wassermann Fastness and Death, ibid. **13:** 389 (Nov.) 1932; Course of the Blood Wassermann in Treated Latent Syphilis, ibid. **13:** 407 (Dec.) 1932.
Cole, H. N., with Usilton, Lida J., and Moore, J. E., and others: Cooperative Clinical Group Studies in the Prevention and Treatment of Congenital Syphilis: Syphilis in Pregnancy, ibid. **17:** 39 (Feb.) 1936; Late Prenatal Syphilis: Interstitial Keratitis, ibid. **18:** 97 (April) 1937.
Cole, H. N., with Usilton, Lida J.; and Moore, J. E., and others: Cooperative Clinical Group Studies in the Treatment of Cardiovascular Syphilis, ibid. **17:** 91 (April) 1936.
O'Leary, P. A.; Cole, H. N.; Moore, J. E., and others: Cooperative Clinical Group Studies in the Treatment of Central Nervous System Syphilis: Asymptomatic Neurosyphilis, ibid. **18:** 45 (March) 1937; Tabes Dorsalis, ibid. **19:** 367 (Nov.) 1938.

2. Clarke, C. W.: Control of Syphilis and Gonorrhea in Scandinavian Countries and Great Britain: Report of New York City Commission to Investigate Prevention and Control of Syphilis in Scandinavian Countries and in Great Britain, Am. J. Syph., Gonor. & Ven. Dis. **20:** 7 (July, pt. 2) 1936.

3. (a) Harrison, L. W.; Ward, D. C. L.; Ferguson, T., and Rorke, Margaret: Report on Antivenereal Measures in Certain Scandinavian Countries and Holland, Reports on Public Health and Medical Subjects No. 83, London, His Majesty's Stationery Office, 1938. (b) The Work of the Venereal Diseases Schemes in England and Wales, Brit. J. Ven. Dis. **14:** 1 (Jan.) 1938.

4. Ingraham, Louise B.: The Persuasive Approach with the Infectious Syphilis Carrier, J. A. M. A. **107:** 1990 (Dec. 12) 1936. Stokes, J. H.: The Public, the Doctor and the Syphilis Problem, J. Social Hyg. **21:** 313 (Oct.-Dec.) 1935.

by the American Social Hygiene Association.[5] This law in its essentials does little more than define the venereal diseases as infectious and communicable, call for their reporting for statistical purposes and relegate the control of the diseased patient to competent medical authority. Since the infectious person is deprived of certain fundamental rights, provision must be made by the state as depriver for a restoration of those rights following the administration of adequate treatment. Since such treatment is by inference the condition on a restoration of full individual rights, it must be provided regardless of the economic status of the individual; in other words, free. The same provision applies in the model law to diagnosis, both clinical and laboratory. They must be freely available to all. Having thus placed the status of the infected person below that of the noninfected and provided for a free means of restoration to full or normal status, the state may then, and only then, proceed to enforcement; namely, the isolation of the infected person during his period of infectiousness, if necessary, without his own volition if he is recalcitrant or negligent. An additional very proper and necessary provision in sanitary and *ipso facto* in venereal disease control law is power to investigate the source of infection. This implies of necessity, and in the modern acceptable laws is provided for specifically by an authorization to compel, the examination of an individual reasonably suspected of being infected with a venereal disease. The alternate to refusal is isolation or quarantine.

Precisely at this point will come some of the difficult questions of interpretation in individually contested cases, if past history in this type of legislation is any guide. Generally speaking, the police power of the public health officer has been maintained by the courts when persons of doubtful reputation have been involved. Another practical situation of serious implication for the ultimate value of law in this field arises here. Anticipating failure of support from the courts on the purely medical issue of infectiousness, there has been a marked tendency on the part of some public health authorities to shift from the sanitary to the moral ground in controlling persons with venereal disease, remanding the individual to custody for criminal conduct as distinguished from public health necessity. The ultimate implications, both for education and for enforcement, of this obvious shift from the public health to the moral point of view, especially in the field of venereal disease, already so gravely encumbered with sexual stigma, is a matter for serious thought. It should influence not only the drawing of legislation but the reaction of both public health officers and courts toward its enforcement. The fact that morals charges in general hold in the practice of the court against women but cannot be made to hold against men (or at least have not been made to do so) introduces still another element of injustice and public health inadequacy into the legal practice in this field.

Let it be accepted, then, that a proposed law should be drawn in sufficiently general terms to permit an adequate exercise of individual expert medical judgment and provide for public health expediency in the individual case without invading the province of morals. In thus allowing adequate exercise of expert medical judgment, it is a further though unfortunate necessity that some provision must be made for the prevention of evasion through connivance between patient and physician. This contingency is well met in the New Jersey law,[6] for example, which grants to the health officer of the jurisdiction power of review over medical decisions in individual cases, and even power to appoint his own medical examiner to check the original findings.

Within this framework of legal and philosophic generalities one may now proceed to put a venereal disease control law to work. The medical principles with respect to syphilis which all law enforcement must recognize are essentially these:

First, no single test or single procedure uncontrolled or unchecked should be allowed to make a diagnosis of syphilis. This applies even to the dark field identification of Spirochaeta pallida, a procedure on which even the reasonably experienced may make serious mistakes and over which some form of control of expertness in judgment should be exercised. It should be further a clearly defined principle that serologic syphilis and clinical syphilis from the standpoint of public health are by no means identically significant. There exists a serologic syphilis which has virtually no public health significance, and there exists a clinical syphilis without serologic confirmation which is of the highest importance from the standpoint of the transmission of the disease. Framed briefly for everyday use, such a principle might read that the positive blood test is never an arbiter of the question of infectiousness versus noninfectiousness, and the negative blood test may be found under any and all circumstances to be without any significance whatever. It follows, therefore, that law and regulatory practice in the control of syphilis which makes the result of the blood test, checked or unchecked, false or true, the arbiter of decisions involving the civil rights and individual freedom of persons cannot stand critical review in the courts of a liberty loving and intelligently guided people. Such a law is subject to constant though variable miscarriage and abuse not only through the shortcomings of the laboratory procedures on which it rests as such but through misinterpretation which takes no account of clinical facts. The congenital syphilitic man or woman, particularly, who has reached adult life with an irreversibly positive blood reaction for syphilis can suffer all the penalties of the law with little or no justification. The patient with a primary lesion still in the seronegative stage or an infection reduced to temporary invisibility and serologic negativity by inadequate treatment can be a public danger of the first magnitude and yet remain entirely outside the control of a law so drafted.

A second principle based on the characteristics of syphilis as a disease and one which when confronted in its full meaning is extremely embarrassing to venereal disease control officers is the definition of infectiousness and noninfectiousness. Deeply though we all desire it, it must be conceded that no absolute definition of noninfectiousness and no means of infallibly attaining it exists at the present day. There will always be in practice patients who have had sufficient treatment to exceed a reasonable standard of control of infectiousness, who are still periodically relapsing and periodically infectious. Conspicuous in this uncontrolled and uncontrollable group is the woman with syphilis. As with gonorrhea, the definition of noninfectiousness may

5. Social Hygiene Legislation Manual, publication 312, New York, Am. Social Hyg. A., 1921, p. 63. Johnson, Bascom: State Laws and Regulations of State Boards of Health Which Deal with Venereal Diseases, J. Social Hyg. 24: 514 (Nov.) 1938.

6. The Venereal Disease Control Law, chapter 253, N. J. P. L. 1918 as amended by chapter 261, N. J. P. L. 1933 (section 7) New Jersey State Department of Health, circular 154 (revised) August 1935.

be tantamount to the definition of cure, and cure by present methods be undemonstrable or even unattainable save over a period of years amounting to a lifetime. In this field, again, public health practice finds itself obliged by the practicalities of the situation to deal with averages and mass results rather than to be too finicky about the details or even the occasional injustice done an individual person. It is therefore one of the first duties in research on syphilis to attempt to define broad categories of infectiousness and noninfectiousness. To this end the United States Public Health Service with the assistance of the Cooperative Clinical Group has been particularly active. Even though one is driven to the point of saying that the standards of noninfectiousness as secured by treatment must be identical with the expectancy standard for cure, one has not uttered something absolutely unpractical. The standard of cure has a 90 per cent validity, with a little more than one third more treatment required than the so-called 20-20 or minimum standard of treatment for infectiousness.[7] Somewhere between the minimum and the maximum within the next several years one may expect a public health median to be drawn beyond which the exceptions will be few and far between and not difficult to provide for by appropriate special judgment and methods, much as in the case of the "typhoid Marys."

Let it then be clearly realized that special legislation for the control of venereal disease should not be written to depend purely and simply on laboratory tests. The factor of expert medical judgment must be drawn into the phraseology in a way to provide for a necessary latitude in interpretation, yet without permitting escape of the individual through a loophole of professional ignorance or connivance.

Finally, a group of facts connected with syphilis which as yet has received virtually no consideration in legislative enactment and which perhaps can be left out of the main framework of law entirely is that of the damaged goods aspect of the disease. Syphilis is, in an as yet not clearly defined proportion of cases, a reducer of efficiency and a producer of hazard and disability in life, in industry and in the social order at large. The person who has a syphilitic infection may fail his family at the critical juncture of its life history; he may fail his fellow workers in an executive post; he may fail the public at the head of a fast-moving train; he may fail a co-worker at a critical or dangerous point in industrial machine and other processing; he may even fail a patient as his physician or surgeon.

Inclusive law on venereal disease control might well take account of these relationships within the broad field of industrial syphilis.[8] If it does so, the protection of the worker against the very understandable but sometimes overexercised disposition of the employer to protect himself from the injured or defective employee, the sometimes hysterical desire of the clientele or the public to be protected from imaginary risks, the unwillingness of the employee to sustain the risk of refusal of employment or discharge from a job already satisfactorily held merely because of the identification of concealed and possibly industrially unimportant disease must all have equal weight.

7. Stokes, J. H.: The Control of Syphilis: A Critical Examination of Some of Its Problems, Ven. Dis. Inform. **17**: 315 (Nov.) 1936; Clinical Problems in Syphilis Control Today, ibid. (supp. 3) 1937, p. 34.

8. Sayers, R. R.: Syphilis Control in Industry, supplement 140, Public Health Reports, 1938. Gehrmann, G. H.: Syphilis Control in a Chemical Industry, Am. J. Syph., Gonor. & Ven. Dis. **22**: 623 (Sept.) 1938. Stokes, J. H.; Beerman, H., and Ingraham, N. R., Jr.: Syphilis in Industry: A Review of Problems and Policy, Am. J. M. Sc. **196**: 600 (Oct.) 1938.

THE MARRIAGE AND ANTEPARTUM TESTING TYPE OF LAW IN THE LIGHT OF THESE PRINCIPLES

At this writing nine states have actual laws regulating venereal disease with respect to marriage, and fourteen additional states in 1938 considered bills to amend their marriage laws or to impose various restrictions. In only four of the latter states have such bills been passed and become laws. An excellent digest of today's legal situation on this front is given by Bascom Johnson.[9]

The barrage of questions to which syphilologists have been subjected by state health officers suddenly confronted with the obligation to enforce insufficiently studied legal enactments indicates quite clearly some of the difficulties likely to be encountered. It is obvious that a law in an individual state is not sufficient to meet the situation. Until legal enactment becomes general throughout the country, evasion must inevitably be expected. Since it is extremely difficult to define the amount of treatment which cures syphilis and impossible at this writing to define exactly what cure is, marriage legislation should limit itself to the use of the term "noninfectiousness" if it proposes to withhold license to marry as long as a person can be regarded as capable of transmitting the disease. The practical difficulties in the way of even such a seemingly modest requirement are well realized by the public health authorities of this country, and they have not yet been adequately met.

While marriage laws in respect to the transmission of venereal disease, similar to those which are being enacted by the various state legislatures in this country, have been in existence in the Scandinavian countries for a number of years, information as to their effectiveness is not apparently readily available. One gains the impression from the report of the survey conducted by the British Ministry of Health [3a] that the penal code invoking punishment for exposing others to risk of infection through marriage or otherwise is seldom invoked and that when action is taken the proceedings are abandoned before sentence is passed in a large proportion of cases.

Realists in the matter of marriage legislation directed toward preventing the transmission of an infectious disease must continue inevitably to draw the distinction between marriage de facto and marriage de jure, which must be part of the everyday thinking of the syphilologist. The fact that sexual intercourse has preceded application for the certificate is such a commonplace that it is a question whether the mere withholding of its issuance until a medical examination is performed has more than a small fraction of the preventive significance which is attached to it. As a freer or more indiscriminate sexual practice tends to prevail, the virtue of marriage legislation will diminish, and it will be relegated to the function assigned to it by Hall [10] in an examination of marriage laws a number of years ago—that of an educational agent. It becomes essentially a chance for a fatherly talk with the doctor who draws the blood.

Here, however, the American medical profession will confront squarely its clinical obligations to the disease.

9. Johnson, Bascom: Laws Relating to Venereal Disease and Marriage: Twenty-Six States, J. Social Hyg. **24**: 409 (May-June) 1938; Premarital and Prenatal Examination Laws, ibid. **24**: 477 (Nov.) 1938.

10. Hall, F. S.: Medical Certification for Marriage: An Account of Administration of Wisconsin Law as It Relates to the Venereal Diseases, New York, Russel Sage Foundation, 1925.

Certain it is that the decision as to the advisability of marriage in the case of syphilitic persons in many individual cases cannot be left to the ignorance of some practitioners or even to specialists in other fields. It is therefore necessary that those charged with enforcement make known to the public in some satisfactory fashion the existence and whereabouts of referee authorities to whom persons with doubtful or individualizable cases may go for opinion. This part of a state mechanism in the control of venereal disease is too easily overlooked by public health officers and should be made a matter for critical study and organization.

The ultimate question as to whether the state can on any serologic grounds at least, and perhaps even on any combination of clinical and serologic grounds, definitely and finally or even indefinitely withhold permission to marry must ultimately be decided by the courts. As syphilologists we must take a definite stand against the validity of purely serologic criteria in decisions of this sort. In fact the showdown may find us astride the fence as to whether individual cases can ever reach a clearcut decision by any method of refereeship. If the law is pushed to this extreme at any point, public health policy with reference to the control of infectious disease will have a critical review such as it has never sustained in all its past.

COLLATERAL FACTORS IN HEALTH AND VENEREAL DISEASE CONTROL LAWS

The operability and effect of venereal disease control legislation is materially influenced by a number of considerations, some of which become evident only on an actual attempt at enforcement of previously framed legislation or ordinance. An excellent example, and one of the oldest so far as American practice is concerned, is the so-called food handlers' law, which is in existence and enforced with varying degrees of effectiveness and ineffectiveness in a number of states and cities in this country. From a collection of this legislation examples of practically every good, bad and indifferent mode of framing can be drawn. The usual procedure is to lump together those engaged in occupations having personal contact as an essential part of their activities and those engaged in the handling of food. The New York State law as circularized to district state health officers makes no mention of food handlers and limits its positive listing by specification to any occupation involving intimate contact with children or as nurse, domestic servant, barber, hairdresser, chiropodist, manicurist, bath attendant or masseur.[11] A provision requiring isolation for syphilis of any patient who conducts himself so as to become a menace to public health is perhaps sufficiently broad to cover many special groups. The New York City regulation, however, more broadly drawn and approaching by way of the general principles governing the control of infectiousness, forbids any person in an infectious stage of a disease from eating or drinking in any hotel, restaurant, drugstore, saloon or other public eating or drinking place. As to occupations, it specifies the manufacture of foods, drinks, beverages, cigars, tobacco, liquor, smoking pipes, cigar or cigaret holders and toothbrushes intended for human use.[12] The New Jersey law as amended in 1933[13] again uses the broad provision that no person with a venereal disease in an infectious stage shall conduct himself in such a manner as to expose others to the infection. Under this heading specific prohibitions of employment are provided for those who are engaged in the preparation, manufacture or handling of milk, milk products or other foodstuffs. Such persons shall not be employed or permitted to work in any dairy, creamery, milk depot or any other place where milk or its products are produced, manufactured or sold, or in any other place or establishment where foods are exposed or handled. No person having a venereal disease in the infectious stage shall engage in the nursing or care of children or of the sick, or in any other occupation of such a nature that his infection may be transmitted to others. The blanket rider in the last sentence certainly gives plenary authority for use and abuse. The Pennsylvania state law, one of the older types, lists occupations from which persons may be excluded because of infectious disease and merely includes syphilis among the number. The periodic control with reference to health of individuals employed, for example barbers, in the state of Pennsylvania apparently lies with the Bureau of Professional Licensing, which with respect to syphilis acts under the following quotation: "Such applications shall be accompanied by an affidavit which shall be made by a practicing physician and shall set forth that the applicant was examined, that a test of his or her blood was made, and that he or she is free from all contagious and infectious disease."[14] The vagueness of such a statement has, of course, its advantages and disadvantages from the standpoint of its enforceability, if not of the employees' protection.

The Massachusetts state law[15] provides an example of definite control of employability by suspension rather than by exclusion or discharge. In the specified occupations of barber, hairdresser, manicurist, waiter (or waitress), nursemaid, domestic, nurse and so on, an infectious patient may be ordered by the physician to discontinue his occupation until, in the opinion of the physician, his infectious lesions are healed. Failing cooperation on the part of the patient, the physician may refuse to assume further responsibility and the name, address and additional information regarding the patient become thereupon reportable to the state department of health.

It will be apparent that these various types of regulations range from forms which place no responsibility on the physician actually in charge of the sick person to those which place a large or even the entire responsibility on him. It may be said generally that legislation or regulation which arbitrarily specifies the indefinitely prolonged unfitness of a person for an occupation because of the presence of a disease whose infectiousness can be determined only for the individual case at the time in question is an arbitrary and possibly unenforceable type of law. That is, its enforcement is conditioned on nonprotest, and a serious contesting of its medical validity would probably lose the state its case. Regulation that places the responsibility on the physician in charge of the individual case has at least an element of fairness and, though applied by the law to

11. New York State Sanitary Code, chap. II, reg. 26.
12. Sanitary Code and Regulations Relative to Reportable Diseases and Conditions and Control of Communicable Diseases: Section on the Examination, Treatment, Isolation and Detention of Persons Affected with Venereal Diseases, adopted July 23, 1918, and amended Oct. 22, 1935, regulation 6, Prohibited Acts and Employment.
13. Footnote 6, section 4.
14. Klein, C. C.: (Chief Registrations and Renewals, Bureau of Professional Licensing, Harrisburg, Pa.): Personal communication to the authors.
15. Regulations Governing the Reporting of Gonorrhea and Syphilis, approved and adopted at a meeting of the Department of Public Health, Oct. 8, 1929; amended Jan. 14, 1930, and Jan. 14, 1936 (sec. 6).

occupations in which infectiousness has far less significance than the promulgators of the law imagine, is nonetheless the more desirable type of legislation.

Some excellent illustrations of the great importance which must attach to the discretion and energy of the individual health officer and the cooperative attitude of the courts can be seen in any general study of this question. The city of Newark, N. J., for example, has a food handlers' law [16] calling for periodic reexamination which under the direction of an able enforcement officer has proved exceptionally workable. The devices employed for securing cooperation from uneducated persons have perhaps some slight elements of the theatrical, but in a case of this sort the means has apparently been justified by the end. The use of subpena-like documents ornamented with the city seal as a means of giving the essential punch to an otherwise harmless summons is an excellent example of executive ingenuity. It must be clear, however, that the necessity for using such devices is a weakness rather than a strength in any type of legislation, and the effect on the courts and particularly on justices scrupulously determined to preserve the value of existing legal forms cannot always be good. It follows, therefore, that one of the first and most important influences in health law enforcement is a species of understanding between courts and health officers as to the best method for meeting the hygienic purposes of the law with due regard for the rights and liberties of the individual. The questionable value of routine food handlers' examinations in controlling the dissemination of syphilis and the other communicable diseases under the usual circumstances is well portrayed by Best,[17] who lists the reasons for abandoning this practice in New York City in 1934, after eleven years' active trial, as follows: 1. The average physician's examinations cannot be considered reliable. 2. The cost of adequate examination with attendant laboratory procedures is prohibitive and not commensurate with the public health benefits obtained. 3. Even though complete examinations were made, there is no assurance that the food handler will remain free of communicable disease during the tenure of certification. 4. The value of this procedure in preventing the spread of a communicable disease such as syphilis is much overrated.

Those whose experience with the field is more than casual realize that one of the chief values of the food handlers' law is to control a social group in which promiscuous sexual activity is notably frequent, and a body of individuals given to wandering and hence to dissemination of whatever infection they may carry to the public at large. One of us, during the Irvine administration of public health venereal disease policy in Minnesota, found the food handlers' law of the greatest utility in controlling waiters and waitresses not because they were food handlers but because of altogether different and far more serious activity. The instrumentality of the barber and the dining car waiter (for years practically the only individual in railroad personnel who was subject to any serious effort to recognize syphilis) in the spread of the disease is certainly questionable to say the least. Gross and improper extensions of the spread of the law when it is freed from the individual case are not hard to find. For example:

A young laboratory worker, a highly trained chemist, concerned purely with testing procedures, having no actual contact with milk or dairy products in which industry he was employed, lost his position on the discovery in routine serologic testing under a state law that he gave a positive Wassermann reaction. The facts of the situation made known to us by the physician who had had charge of the boy since birth were that he had a prenatal infection for which both father and mother had been adequately treated after his birth. The boy himself had had an interstitial keratitis with good recovery but with the serologic irreversibility so often accompanying this complication. His health was entirely satisfactory, his disease noninfectious, his occupation one which gave him absolutely no contact with food or with persons likely to contract a transmissible disease were such existent. There could be no more complete reductio ad absurdum for a blanket legal provision based on blood testing than the injustice done this particular type of individual, yet a ruling of the state attorney general cited by the company which discharged the employee absolutely closed the door on further discussion.

To be sure, public sentiment and concern with the transmissibility of syphilis will for a time aid in the enforcement of enacted legislation. This very assistance and cooperativeness of public sentiment may serve as a boomerang when a sufficient number of illustrations of the injustice and unwisdom in a poorly drawn law become known.

Under the legislation of the past decade, enforcement when projected into the courts has usually been at the expense of what might be called the relatively down and out types—persons of no reputation and questionable or "floating" standing in the community against whom it was relatively easy to secure authority from a court for summary action such as detention and quarantine. It is inevitable with the enormously wider spread of the new legislation that enforcement will be called on to deal with persons of character, standing and resource, and it is desirable that such persons contest the law in apparently contestable cases and compel interpretation by the courts of the many important principles embodied. Among the first of the issues in which legislation affecting syphilis is likely to be involved is the right to uncover health facts about an individual which do not concern a transmissible condition. It cannot be too constantly borne in mind that infectiousness in syphilis is not synonymous with positive blood tests or noninfectiousness with negative. The frank purpose of the existing marriage law is, of course, to reveal infectious syphilis, but most of the legislation is so drawn as to lay emphasis rather on the uncovering of the disease than on its identification in an infectious stage. The question as to whether any person may be obligated under any conception of civil liberties to undergo testing or examination for the mere existence of disease (and particularly disease implying, rightly or wrongly, moral turpitude) has had some consideration in the courts, and there have been decisions which have denied to a plaintiff the right to oblige a person under trial to undergo either physical examination or blood test to determine his status with respect to syphilis. It will therefore be doubly necessary, in order to protect legislation for the control of infectiousness in syphilis against adverse judicial decisions, to place the responsibility for the interpretation of the blood test and infliction of consequences not with the law itself but with the physician or a properly authorized public health representative. Without such a provision the issue as to whether a person's body is his private property and individual bailiwick will quickly

16. Foodhandlers' Licenses, Ordinance, Newark, New Jersey Department of Health, as adopted by the city commissioner, Dec. 19, 1933, and amended Jan. 30 and Nov. 9, 1934.

17. Best, W. H.: Is Routine Examination and Certification of Food Handlers Worth While? Am. J. Pub. Health **27**: 1003 (Oct.) 1937.

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become serious. It has also long been recognized by claim and damage authorities that, when a case involving syphilis as a contributory factor in compensation is brought before a jury, it is fundamentally bad policy and likely to lead to adverse decision to force the evidence of syphilis in the injured person before a jury for adjudication. The jury apparently tends to take the view that in attempting to attach syphilis to the issue the defending attorney is endeavoring to besmirch the reputation of the pleader and to deprive him of just compensation on a character irrelevancy. It is therefore a matter of sentiment as well as legal judgment to just what point the health authority can afford to sustain projection of such issues into the courts.

The question of secrecy and confidence, always important in medical matters, has a double importance in all that concerns venereal disease. The mere statement in the law that the record of a test will be filed in confidence with the state health authorities can be received with only qualified assurance. The access to such records is usually too widespread and the ability of persons without authority, by misrepresenting themselves as physicians, or of physicians influenced by motives of curiosity and the like to secure information can hardly be satisfactorily guarded. Grapevine communication has the fluidity of electricity in these matters, and it is as we have sometimes seen by personal observation, practically impossible to trace to its source what was nonetheless an indubitable leak. Not even the sequestration of records in a safe deposit vault under a single responsible control has prevented the forging of a patient's signature by a physician in behalf of the life insurance company which desired information on a blood test. There is, moreover, the ancient question of the privilege of communication and record. In a discussion of this matter by Wood,[18] it is made clear that the issue is a "practical rather than a legal one." Under acts of the Pennsylvania assembly in 1907 for example hospitals, which are common sources of bootleg information on syphilis, have no right to give data from their records disclosing communications with physicians attending a patient in a professional capacity or information which would tend to blacken the character of the patient without the patient's consent. The sole exceptions are civil cases brought by the patient for damages on account of personal injuries. The constant abuse of this law, exemplified by correspondence between social service agencies, for example, in which positive serologic reports are bandied about without regard to the responsibilities involved or the protection of the person concerned, is characteristic and certain to encounter serious difficulties if a wave of legal resort and interpretation once gets under way. While this confidential privilege may be waived by the patient, and such waiver might conceivably be made a stereotyped part of a contract relationship as it now so generally is in life insurance policies, it is almost certain that any court which respects the civil rights of individuals will refuse to sanction the incorporation of such blanket waivers into marriage licenses and documents of similar purport. It must be clear, therefore, that aside from the various great practical difficulties of an absolutely leaktight official filing and recording mechanism there may be serious difficulty with the question of professional privilege before venereal disease legislation is far advanced in its career.

18. Wood, C. B.: Legal Status of the Medical Record, Bull. A. Record Librarians of North America, June 1932.

Syphilis and the job, already mentioned briefly in the discussion of foodhandlers' regulations, presents many collateral aspects of interest for lawmakers. The right to make public an item in an employee's physical condition, whether determined by physical examination or diagnostic test, has not as yet been subject to contest in the court so far as we know. The one thing that could most certainly bring it to contest in the court would be the excluding of employees from work for nonsignificant syphilitic infection. As early as the late war, from the standpoint of medical control, it was reported that the labor organizations of one of the largest industries in the country had taken a definite, though not public, stand against routine medical examination and testing for syphilis, notwithstanding that all concerned could recognize its great importance as a health hazard in the particular work involved.

Two cases very well illustrate the principles governing a situation of this sort:

An assistant cook in one of the large city hospitals was discharged by his chef with the statement that the dismissal was given because the patient had a positive blood reaction for syphilis (food handlers and similar legislation in the state of Pennsylvania). The man was told that when he had received enough treatment to give him a negative reaction he would be reemployed. Reinstatement was refused even after the patient had had considerable treatment, and the head of the clinic was privately given the explanation that the individual was rated as inefficient and was discharged for that reason, the positive blood reaction being merely a pretext. Inquiry into the individual's reputation in his job seemed to indicate that he was efficient rather than inefficient and that the motive back of the discharge was one of personal jealousy. His serologic reaction ultimately became negative, but no reinstatement has occurred to date.

This case illustrates the misuse of the law governing infectious syphilis in extending application to noninfectious syphilis; the arbitration of the individual issues, medical merits and personal rights in the case by an incompetent arbitrator—the chef in charge of the kitchen; the misuse of a positive serologic reaction as a pretext for a discharge actually based on other and personal grounds.

A kitchen worker attached to the staff of a college training table, who without preliminary medical examination had been employed by the college for six months and proved to be thoroughly efficient, was then subjected to a routine physical and serologic examination and the blood reaction was found to be positive by the state laboratory. As was proper under the circumstances, he was referred to the college medical clinic having charge of syphilis and was found to have a seropositive latent infection of probably not less than twenty-six years' duration, the patient being at this time 46 years of age. Before it was possible to work up the case or have a competent medical opinion on his status, the nurse attached to the training house squad discovered in some way that the patient had been referred to a syphilis clinic for study and without waiting for further information took the matter to the lay superintendent of employees in this group. The lay superintendent and nurse, again without referring the matter to the physician who had originally recognized the presence of syphilis in the employee, proceeded directly to the syphilis clinic in an effort to obtain information as to whether this employee had syphilis. Information was properly refused them on the grounds that they were laymen and that the patient was privileged in the matter of communication. Thereupon these two lay persons, considering further reference of the matter to medical authority unnecessary, took it on themselves to discharge the employee on the ground that he had syphilis and that his association with food handling work on the training table made him a public health menace. Thereupon the clinic in which the man's infection was under study went back to the physician in charge of the case with

this report, and by conference with him and with the cook in the kitchen succeeded in securing the employee's reinstatement, since his syphilitic infection was absolutely without significance for the transmission of the disease.

In view of the state law under which this case would come to jurisdiction at the hands of the attorney general or the court, the action of the clinic would have been overruled, since the law in this particular state was mandatory with reference to the discharge of seropositive persons who had anything to do with an occupation or industry concerned with food handling. The obvious justice of the situation would therefore have miscarried completely after a career of grapevine detective work and unauthorized summary action by noncompetent persons typical of possibilities in such situations as this.

Before proceeding to a consideration of the false positive serologic reaction in relation to syphilis laws, we shall summarize the principles thus far brought forward.

1. Legal enactment dealing with the control of syphilis should place the power of decision as to infectiousness, public industrial hazard or liability to become a public charge (the only proper case for legal control) in the hands of a physician, empowering him to waive responsibility for the patient's noncooperation by report to the state health authority.

2. The equipment of the physician for such responsibility must be made a matter of general medical concern and education, and the law must provide for appeal to a recognized authority either by patient or by health officer to adjust an individual decision if such is necessary.[18]

3. The differentiation of the detection of infectiousness from mere uncovering of the disease in latent or harmless form can thus be preserved.

4. Provisions for the changing status of the individual with the institution of treatment, especially in terms of its effect on the blood test, should not be incorporated in the law. In their place the decision as to fitness should be individualized and left to the physician and health officer, acting together with a referee authority.

5. "Food handler" and similar class industrial legislation is an anachronism and like all types of occupationally founded discrimination in venereal disease control should be displaced by comprehensive legislation based on (1) control of infectiousness and (2) precise definition of industrial and public liability, protective of the rights of both employee and employer.

6. The practicalities involved, including the difficult issues of the privileged record, professional confidence and health status of the individual in whom infectiousness is not an issue, will for a time, at least during experimental regulation, probably best be dealt with by conference between the physicians concerned, the public health officers and the courts.

7. The wisdom of devices savoring of "bluff" in enforcement, while probably real, should be carefully considered as a matter of public policy.

8. Increasingly serious questioning and contesting of health officers' and doctors' decisions in the courts may be expected and invited as the social level of those affected rises above the down and out and the "demimonde."

9. Secrecy and the preservation of confidence are more real and difficult issues in venereal disease detection and control work than health officers and law framers are apt to realize. The mere enactment of confidential status does not secure it in the strict sense of the term. It is oftener a matter of personnel. Violation or misuse of the professional relation may be made specifically and severely punishable (compare dissenting remarks by N. A. Nelson to Ramsey's section report "Public Health Control of Syphilis," Washington, December, 1936).[19]

10. Enactments made under public pressure, hysteria and misconception will sustain serious setbacks and induce equally misconceived opposition and reaction if injustice and violation of personal confidence and personal rights become frequent and widely known.

11. In matters involving the job, current practice quite largely fails to discriminate between infectious or disabling syphilis and harmless syphilis.[20] In our case material there is evidence of grapevine telegraphy, action without authority, disregard of medical knowledge and supervision, misapplication of medical therapeutic principles by laymen in supervisory capacities and use of results of blood tests as pretexts for personal and unfair discriminations.

THE LAW AND INTERPRETATIONS OF THE SEROLOGIC TEST WITH SPECIAL REFERENCE TO THE FALSE POSITIVE

THE SEROLOGIC TEST FOR SYPHILIS AS A BASIS FOR DECISION

It must be obvious from the foregoing discussion that the dependability of serologic results, and hence the quality of serologic test performance in syphilis, is critically important in all forms of legal regulation. The familiar medical tendency to regard a test tube procedure as having something of the oracular and indisputable in it is shared by laymen and lawmakers. It must be clear that a law which makes either the positive or the negative serologic test for syphilis the basis for important decisions, such as eligibility to marry, will have a validity and enforceability fundamentally dependent on the reliability of the procedure employed. A law drawn so as to make test results crucial and which uses them as a substitute for well rounded medical and expert syphilologic judgment works a fundamental injustice and is likely to be brought to book in the courts.

INTERPRETATION OF THE POSITIVE SEROLOGIC TEST FOR SYPHILIS

For a number of years the serology of syphilis has been dominated by the laboratorian. With a knowledge of clinical syphilis based principally on the scattered facts of the history of the infection and clinical signs sent to him on report sheets, the performer of tests for the presence of syphilis has been obliged to attempt, often reluctantly, the alinement of his results with clinical facts. As the serologists, working against this thin background of clinical information, sought to increase the sensitivity and yet preserve the specificity of newly devised procedures, elements of personal equation and interpretation have unquestionably further played a considerable role. It has been difficult for serologists to accept the idea of a considerable margin of nonspecificity, especially in tests of their own devising, and it has been equally difficult for them to see called into question both the false positive and the false negative trends which are inseparable from any long time per-

19. Nelson, N. A., in discussion of section report by Ramsey, G. H.: The Public Health Control of Syphilis, Ven. Dis. Inform. (supp. 3) 1937, p. 78.

20. Moore, J. E.: Syphilis and Unemployment, editorial, Am. J. Syph., Gonor. & Ven. Dis. **21**: 339 (May) 1937.

formance of serologic tests for syphilis. It was therefore of particular interest that, at the recent assembly of serologists and laboratory directors for the consideration of the problem of national serologic standardization (Hot Springs, Ark., Oct. 20-21, 1938), the syphilologists delegated to attend it, without previous consultation on the matter, joined in a vigorous demand for the revision of current concepts of the meaning and validity of the positive serologic test. The technical false positive had already had, to those familiar with the work, a sufficient airing in the reports of two government inspired national cross checkings of laboratory procedure in this country.[21] The results of these conferences have really shown that no justification for the diagnosis of syphilis was to be found in a number of cases in which the diagnosis had been based on what proved to be a single false positive reaction. So much importance attaches to this finding that the serologic committee reemphasized the fact that a serologic diagnosis of syphilis, unsupported by history or clinical evidence, should never be made on the basis of a single positive blood reaction. If a positive reaction is obtained in such a latent case, it should be repeated in the same laboratory or another laboratory utilizing two or more different tests.

While many state and local laboratories achieved results that are at least comparable to the results achieved in the laboratories of the originators of the methods, in some of these laboratories the results obtained were considerably inferior to those obtained with control tests and were inadequate for diagnostic purposes. After a careful review of five official evaluation studies of tests for syphilis, Nagle and Willett [22] concluded that no efficient test can possess less than 99 per cent specificity (excepting certain few diseases, especially malaria and leprosy) and 65 per cent sensitivity, and that ideally the specificity should approach 100 per cent even at the sacrifice of sensitivity.

The discussion of the doubtful positive reaction was illuminated by such as that of Kahn, for example, who was inclined from his personal observation to rate a two plus Kahn result as doubtful rather than positive. The recent establishment of the fact that leprosy,[23] malaria [24] and certain febrile illnesses including subacute bacterial endocarditis [25] and infectious mononucleosis [26] are all capable of giving rise to biologic false positive results in laboratory tests for syphilis is an illustration of current revision. The work of Barnett and Kulchar [27] on syphilitic reagin in normal blood and their apparent confirmation of the existence of a false positive provocative effect following intravenous injection of neoarsphenamine are genuine landmarks in reinterpretation. The latter observation is of particular interest because the attempt by Strickler and his associates,[28] now nearly two decades ago, to demonstrate the contention that Barnett and Kulchar have now established by more exact measurement was at that time laughed at and pounced on by clinicians and serologists alike. It was therefore particularly interesting that the trend of the discussion from the clinical standpoint at Hot Springs should have been so definitely toward the necessity for revision of our conception of the positive and especially of the doubtfully positive serologic test.

Within the past ten months there have appeared within the practice of one of us, nine typical illustrations of the complexities of the serologic interpretative problem. In a relatively small practice this is a large proportion, and the short period of time in which the material was presented probably reflects the growing acuteness of the problem under the wave of serologic testing now sweeping over the country. Brief abstracts of some of these cases and the decision reached in each will illustrate better than mere discussion the problem that confronts the public and the profession in this field today:

CASE 1.—A chemical engineer aged 24 was placed on treatment for syphilis by his plant physician when found to have a two plus Kahn reaction on blood obtained while the patient was suffering from a rather severe sore throat. He was given an injection of neoarsphenamine and a week later a second injection. The second injection was followed by a sharp febrile episode with a profuse erythematous eruption, during which a second two plus Kahn reaction was obtained. He was told that the eruption was his secondary rash and advised to continue treatment. The examination of the patient and the critical study of the attendant circumstances, including an examination of his fiancée, made it reasonably clear that the patient did not have syphilis. The fiancée had been exposed once (the only time the patient had ever had intercourse) without acquiring the disease, though the patient was presumably in the acutely infectious stage. The rash associated with the febrile episode, which conforms in practically every detail to the Milian eighth day erythema, known to be associated with the second injection of neoarsphenamine in patients carrying some other type of infection than syphilis, disappeared in two days. While no evidence of syphilis has since been recognized, even following the most searching examination, the patient was nonetheless advised to follow through the Cooperative Clinical Group standard treatment for early syphilis [29] as a safety first measure.

CASE 2.—A housewife aged 25 had a macular eruption of the chest and arms in January 1938. Serologic tests (Wassermann) performed in a private laboratory on two separate specimens of blood were reported three plus and two plus during the presence of this eruption, the Wassermann reaction of the spinal fluid being reported negative with a negative colloidal gold reaction. At this time the husband had a negative reaction. An abortion at three months was induced by the attendant physician, who told the patient that the fetus could not escape infection. The eruption, which was said to have lasted three or four weeks, was apparently not seen by a dermatologic consultant. Following two injections of neoarsphenamine and three injections of bismuth subsalicylate the patient presented herself for reconsideration of her problem and the continuance of her treatment. There were no longer any evidences of the disease and no attendant circumstances confirmed the presence of the infection. Serologic reactions, most of them to Kolmer, Kline, Kahn and Eagle tests performed in a state laboratory and the laboratory of the syphilis clinic, were completely negative. A

21. Cumming, H. S.; Hazen, H. H.; Sanford, A. H., and others: The Evaluation of Serodiagnostic Tests for Syphilis in the United States, J. A. M. A. **103**: 1705 (Dec.) 1934; footnote 25. Parran, Thomas; Hazen, H. H.; Sanford, A. H., and others: The Efficiency of State and Local Laboratories in the Performance of Serodiagnostic Tests for Syphilis, Ven. Dis. Inform. **18**: 4 (Jan.) 1937.

22. Nagle, N., and Willett, J. C.: What Did Five Official Evaluation Studies of Tests for Syphilis Reveal? Am. J. Syph., Gonor. & Ven. Dis. **22**: 231 (March) 1938.

23. Hazen, H. H.; Parran, Thomas; Sanford, A. H., and others: The Occurrence in Leprosy of Positive Serodiagnostic Tests for Syphilis, Ven. Dis. Inform. **17**: 253 (Sept.) 1936.

24. Taussig, A. E., and Orgel, M. N.: Kahn Test in Malaria, J. Lab. & Clin. Med. **22**: 614 (March) 1937. Hazen, H. H.; Senear, F. E.; Parran, Thomas, and others: Serologic Evidence of Syphilis in Malaria Patients, Arch. Derm. & Syph. **37**: 431 (March) 1938.

25. Cumming, H. S.; Hazen, H. H.; Sanford, A. H., and others: The Evaluation of Serodiagnostic Tests for Syphilis in the United States: Report of Results, J. A. M. A. **104**: 2083 (June 8) 1935.

26. Bernstein, A.: False-Positive Wassermann Reactions in Infectious Mononucleosis, Am. J. M. Sc. **196**: 79 (July) 1938.

27. Barnett, C. W.; Kulchar, G. V., and Jones, R. B.: Quantitative Provocative Reactions in Normal and Syphilitic Sera Following the Injection of Neoarsphenamine, Am. J. Syph., Gonor. & Ven. Dis. **22**: 712 (Nov.) 1938.

28. Strickler, A.; Munson, H., and Sidlick, D.: Positive Wassermann Test in Nonsyphilitic Patients After Intravenous Therapy, J. A. M. A. **75**: 1488 (Nov. 27) 1920.

29. Stokes, J. H.; Cole, H. N.; Moore, J. E., and others: Standard Treatment Procedure in Early Syphilis, Ven. Dis. Inform. **15**: 149 (April) 1934.

bismuth provocative procedure was carried through (interval since last treatment, one month) with completely negative results. The patient was told that her treatment should be continued as for a secondary syphilis [29] even though the clinical and serologic response, the total absence of signs and confirmatory circumstances all suggested that she had been the victim of false partial positive reactions during an intercurrent eruptive condition.

CASE 3.—A musician aged 32 voluntarily seeking a premarital examination (it turned out subsequently that he had been married the week before) had two moderate but definitely positive Wassermann reactions (Kolmer) in one of the best serologic laboratories in the country. Unwilling to accept this result, his physician subjected the situation to review by one of us with a resulting picture of serologic confusion as follows: a complete negative, followed by a weak positive and negative reaction in the laboratory which had originally found him definitely positive; a complete negative reaction in the laboratory of the University Syphilis Clinic, and a negative spinal fluid examination. A bismuth provocative effect was then obtained in which the Kolmer reaction increased from negative to strongly positive on two successive weeks in two laboratories, the Kahn reaction from negative to strongly positive in one laboratory, the Kline reaction from negative (one plus) to three plus and again negative, and the Eagle reaction from negative to partially positive. This group of results was rated as sufficient to establish the existence of an infection, and the patient was instructed to continue treatment. Painstaking investigation of the background and collateral factors disclosed only one suspicious circumstance: Eight years before the patient had had enlarged cervical lymph nodes following a "cold," with surgical removal, accompanied however by a negative serologic reaction of the blood. Clinical examination for congenital as well as acquired syphilis was completely negative.

CASE 4.—A student aged 18 received a four plus Wassermann report as part of a physical check-up by his own physician. Immediately afterward a hospital in a different city gave the Wassermann and Kline reactions as negative, and a urologic clinic reported the Wassermann reaction a weak positive, the Kahn a weak positive and the Eagle positive. Examination of this patient by the syphilologist disclosed only a somewhat increased prominence and thickening of the right clavicle suggestive of a Higoumenakis sign, which was probably due to the fact that for three years he had carried a rifle on this shoulder two hours a day. Clinical examination for syphilis, including examination of the mother, was completely negative. Kolmer, Kline and Kahn reactions at the University Syphilis Clinic laboratory and the Kline reaction at the state laboratory were also negative. The initial serologic reaction was adjudged falsely positive and no further treatment was advised.

CASE 5.—A pregnant wife volunteered to have a blood test made as part of an antepartum examination and a negative result was obtained. But the husband, who volunteered for a test at the same time, obtained a report from the state laboratory on two occasions five weeks apart of a negative Kline and a strongly positive Kolmer reaction. In the interval another hospital laboratory had reported the Hinton reaction negative and the Kolmer reaction negative. The patient, with whom one of us had been acquainted professionally for more than a decade, then underwent a complete examination in the University Syphilis Clinic laboratory, covering a period of five weeks and including five successive tests, which was clinically negative for syphilis (the patient was an eczema, asthma, hay fever subject) and in which the spinal fluid and a bismuth provocative procedure gave negative results. The state laboratory once more reported a partially positive Kolmer reaction but all other tests gave negative results. The patient was told that there was no convincing evidence of syphilitic infection and to report again in six months.

CASE 6.—A woman aged 29 was denied a license to marry in a neighboring large state because her physician did not wish to assume the responsibility incurred by a report from the state laboratory of a titer of two plus, three plus and 3.4 units by the state Wassermann technic in three tests over a period of five weeks. The Wassermann and Kahn reactions at a large hospital in a neighboring state were negative on two occasions three days apart. On close inquiry it appeared that the titrated state laboratory tests were taken while the patient was menstruating, when the period was just over and just at the end of the next succeeding period. The negative reactions were obtained between the periods. A complete examination of the patient disclosed no clinical evidence of the disease and no reason for suspecting its existence. Serologic reactions of the blood were negative between her periods in the laboratory of the University Syphilis Clinic. There was a remote possibility of congenital infection implied in the death of siblings in infancy but there was nothing clinically to support it. A history of some form of arthritis and an inconstant soft systolic murmur in the third left interspace were the only additional possibly significant signs She was advised to have a blood test taken at the middle of each succeeding four lunar months, this to be followed by examination of the spinal fluid if any trace of positiveness appeared. She was warned (for she had married in another state in the meanwhile) to avoid pregnancy and to have her situation reconsidered should pregnancy occur.

HOW TO GO ABOUT CHECKING THE REPORT OF A POSITIVE SEROLOGIC REACTION

1. The first inquiry should be into the source of the report and the methods used. It is axiomatic, nowadays, that the report of a serologic reaction is worth only as much as the reliability of the laboratory from which it emanates and the responsibility and skill of the performer. It is not to be expected that small private laboratories or even large state laboratories operating without interlaboratory check and without clinical control will be able to render the most trustworthy reports obtainable. States in which a machinery for the serologic testing of applicants for marriage licenses or for pregnant women has been set up, or industrial organizations in which an attempt is made to provide an intramural laboratory service, should study and conform to the standards about to be set up by the United States Public Health Service.

2. The time at which blood is drawn for the test and all attendant circumstances, including particularly the presence of intercurrent and especially febrile infections, must be taken into account in interpreting test results.

3. No single positive report should ever be accepted without confirmation. Repetition of the tests in the same laboratory by the same procedure is the least searching form of check. The performance of two or even three standard test procedures may provide additional interpretative evidence, but the difficulties of the interpretation increase with the number of tests and a corresponding degree of experience and expertness becomes desirable. The sending of the blood to several laboratories is likely to increase the confusion and multiply the interpretative difficulties, though it is a proper check when conducted under sufficiently experienced direction. Nonstandard or individual modifications of standard serologic tests for syphilis (for this country the Kolmer, Kahn, Kline, Hinton, Eagle procedures may be regarded as standard) are likely to lead to confusion and uninterpretable results. This is especially true of the older multiple antigen and cholesterinized procedures.

4. Clinical examination in the doubtful case must be searching and conducted by one who is experienced in the recognition of individual, relatively unfamiliar signs such as the Moon molar and other dental anomalies, the facies of prenatal syphilis, the less obvious evidences of early cardiovascular and neurosyphilitic involvement.

It should be emphasized that the history of primary and secondary lesions taken as a routine has a margin of error ranging from 30 to 60 per cent or even higher and is practically worthless in women.

5. An examination of the spinal fluid should be conducted when, in the opinion of a reasonably expert reviewer of the evidence, it is actually necessary to do so. Provocative procedure being open to suspicion, at least so far as the arsphenamines are concerned, serial repetitions of the test will have to be substituted. The bismuth provocative procedure, even though resorted to in the foregoing cases, likewise has elements of uncertainty probably shared by all provocative procedures and is very much in need of reappraisal. Observation is, of course, a necessary element in any decision and absolutely essential if the weight of evidence pro and con approaches "fifty-fifty," so to speak.

6. A "no case" or negative decision inevitably involves some elements of subliminal or intuitive thinking. The necessity for a genuine acquaintance with the patient whose problem is under review, with his family, with all those who may have been drawn into the syphilitic infection from the standpoint of contact, family relationship and so on, may compel one to resort to epidemiologic case finding methods.

7. The decision to treat on suspicion, while it seems an obvious resort, is nonetheless one for serious deliberation. Particularly is this so in women, for the problem of the infected woman is already uncertain enough from the standpoint of her ability to transmit the disease in a subsequent pregnancy,[30] and the uncertainty can be multiplied many times by half-hearted or incomplete resort to treatment. The effects of treatment on serologic tests are unreliable as evidence in doubtful cases, so that the purpose of treatment is rather the protection of the individual and his contacts than the settlement of his diagnosis. It should be emphasized again and again that therapeutic tests on doubtful genital and secondary lesions can be interpreted only by experts and are of doubtful justification and validity at that. All in all, it is probably better, if the decision is made to treat, to ask the patient to go through with the full standard therapeutic regimen for the phase and stage of the disease in which he would be were the evidence of infection indubitable. Only in this way can he be given the best assurance that modern management of syphilis affords that he will be free of complications and fit for normal responsibilities.

SUMMARY

From the foregoing presentation it may be regarded as reasonably evident that legislation calculated to make the recognition of a syphilitic infection a basis for conduct of any kind cannot be framed so as to place sole or even major dependence on any laboratory procedure, including a blood test. It is essential that the individual autonomy and judgment of the physician be invoked and preserved. It is the duty of the medical profession, the medical schools and public health authorities to concentrate on the development of a mechanism of adequate complete examination and expert refereeship as a necessary supplement to any attempt to control syphilis by law.

30. Cole, H. N., with Usilton, Lida J., and Moore, J. E., and others: Cooperative Clinical Group Studies in the Prevention and Treatment of Congenital Syphilis: Syphilis in Pregnancy, Ven. Dis. Inform. **17**:39 (Feb.) 1936.

DIABETIC GANGRENE OF THE FACE

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Gangrene of parts of the body other than the extremities is to be considered a rare complication of diabetes mellitus. Gangrene of the nasal septum and turbinates in diabetes has been described both in America [1] and abroad.[2] Bulger [3] has described gangrene of the right half of the tongue in diabetes, Riven [4] a disseminated cutaneous lesion which he termed diabetic dermatitis gangraenosa, Elkin [5] diabetic gangrene involving the vulva, and Sturgis [6] diabetic gangrene of the lip.

My purpose in this report is to present the little known association of diabetes mellitus and staphylococcic gangrene of the face. A search of the literature reveals only three cases [7] involving the cheek, two of which closely resemble clinically the conditions to be described here. The clinical picture has been noted only casually, and laboratory and pathologic reports are either scanty or lacking. This complication of diabetes mellitus presents some interesting features regarding differential diagnosis and prognosis.

REPORT OF CASES

CASE 1.—*History.*—A white man aged 47, a landscape contractor, admitted Jan. 10, 1937, complained of swelling and redness of the right side of the face, with fever and malaise. He died January 17.

The present illness dated back to one week before admission when a head cold developed, associated with a running nose. About the same time, or shortly thereafter, he noted that the right side of the face had become slightly reddened. There was no history of trauma. The condition of the face became worse and three days before admission the right side of the face became definitely swollen and markedly red, his right upper eyelid began to swell and he felt feverish. The day before admission his right eye was closed entirely, small blisters began to appear on the lids, and on the day of admission these began to discharge pus. He was sent to the hospital by his physician with the diagnosis of erysipelas, which was confirmed by the admitting staff, and was admitted to the contagious ward with this diagnosis.

The past history revealed nothing of any moment except long-standing obesity and a known diabetic condition for the past five years. The diabetes was readily controlled by diet and by 5 units of insulin in the morning and 10 units at night. He had not seen his physician for several months previous to his present illness.

Examination.—The patient was obese. On physical examination he was lying in bed and was apparently quite uncomfortable. The entire right side of the face was covered with a reddened lesion which was somewhat elevated. The borders were not sharply defined. The right eyelids were edematous, the eye was closed and the upper lid exuded creamy pus from a small area. The skin of the left eyelids showed beginning redness. The rest of the examination was essentially negative.

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From the Medical Service of Dr. Ernest Dickey, Meadowbrook Hospital.

Dr. Frank L. Meleney of the Presbyterian Hospital, New York, rendered valuable aid in interpreting the clinical data and in reviewing the final manuscript.

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2. Van Noorden and Isaac: Die Zuckerkrankheit, ed. 8, Berlin, Julius Springer, 1927, p. 295.
3. Bulger, H. A.: Diabetic Gangrene of Orbit and Nares, J. Missouri M. A. **26**: 304 (Jan.) 1929.
4. Riven, S. S.: Dermatitis Gangrenosa—A Complication of Diabetes Mellitus, Am. J. M. Sc. **189**: 550 (April) 1935.
5. Elkin, C. W. W.: Occurrence of Diabetic Gangrene in an Unusual Location, J. A. M. A. **102**: 2182 (June 30) 1934.
6. Sturgis: Diabetic Gangrene of the Lip, Boston M. & S. J. **124**: 261, 1891.
7. Brooks, G. P.: Diabetic Gangrene of the Face, Brit. M. J. **2**: 539 (Sept. 31) 1929. Bowers,[1] Brier.[11]

The temperature was 103 F. (rectal), pulse rate 124 and respiratory rate 28.

Laboratory Reports: Analysis of the urine showed albumin 2+, sugar 2+ and no acetone or diacetic acid. The microscopic examination was negative.

Analysis of the blood showed 84.5 per cent hemoglobin. The differential count of the white blood cells gave 30,600 leukocytes, with polymorphonuclear leukocytes 89 per cent, lymphocytes 9 per cent and eosinophils 2 per cent. Nonprotein nitrogen was 38 mg. per hundred cubic centimeters and sugar 278 mg. The Wassermann and Kahn reactions were negative.

Cultures of material taken from the nose and throat yielded staphylococci. Eye smears showed staphylococci and gram-positive rods.

Course.—During his stay in the hospital the patient went rapidly downhill. The temperature ranged between 101 and 104 F. The diabetes was difficult to control both by diet and by insulin. On the second hospital day the left cheek became involved. On the third hospital day the right cheek rather suddenly became purplish, and several small blisters and bullae formed which contained clear fluid. That night they broke and the next day these areas began to discharge pus. A direct smear revealed staphylococci. The lesions were treated locally by boric acid compresses and ultraviolet radiation. At no time did the patient complain of pain.

Two days before death the blood sugar advanced to 470 mg. He became comatose. Urinalysis showed sugar only 2 plus with no acetone. A blood culture taken two days before death showed 200 colonies of Staphylococcus aureus per cubic centimeter. The entire right cheek was a mass of purplish green slough. The patient died on the eighth hospital day.

Necropsy.—Permission for necropsy was obtained and this was performed fifteen hours after death by Dr. Joseph Lane of the department of pathology.

The pertinent changes were a wide area of edema and cellulitis over the entire right side of the face, which was of a suffused purple-gray bearing areas of ulceration and necrosis in places. The lungs showed bilateral acute fibrinopurulent pleurisy and complete collapse of the left lung with empyema, while the right lung showed many subpleural abscesses with a confluent lobular pneumonia involving all its lobes. Microscopic examination of the lungs revealed pulmonary congestion, edema and focal abscess formation and diffuse necrosis and patchy pneumonia. Smear of the abscesses revealed staphylococci.

CASE 2.—*History.*—A white woman aged 55, a housewife, admitted March 19, 1937, complained of redness and swelling of the right side of the face and fever. She died March 22.

The present illness dated back six days before admission. The patient noted a small "boil" on the inside of the left nostril. There was considerable pain. The lesion was treated conservatively with hot boric acid soaks and opened spontaneously with free drainage and relief of pain.

The next day her lip and the skin of the nose on the right side began to feel warm, turned red and began to swell. By evening it had spread to the right cheek. This was accompanied by fever and malaise. A diagnosis of erysipelas was made by the local physician and on the following day the patient was admitted to the contagious ward of Meadowbrook Hospital.

The past history revealed a known diabetic condition for several years. She had taken as much as 15 units of insulin three times a day plus a diet for the control of the diabetes. Three weeks before admission she was seen by her physician, at which time she was on a strict diet with no insulin and was told that there was a small amount of sugar in the urine. She was told also that she had had high blood pressure for the past two years.

Examination.—The patient was obese. When she was being examined she was lying quietly in bed, apparently acutely ill. There was a dull red swelling extending over the right cheek and down the submaxillary region of the neck. The lesion was slightly raised and the borders were not sharply demarcated. There were two small crusts just within the left nostril of an apparently almost healed furuncle.

The temperature was 103.4 F. (rectal), pulse rate 100 and respiratory rate 25.

Laboratory Reports: Analysis of the urine showed sugar 3+, acetone 3+.

Analysis of the blood showed 100 per cent hemoglobin. The count of the white blood cells gave 14,000 leukocytes, with polymorphonuclear leukocytes 76 per cent, lymphocytes 12 per cent, monocytes 12 per cent. The Wassermann and Kahn reactions were negative.

Cultures of material taken from the nose and throat yielded staphylococci.

Course.—The patient was treated vigorously for diabetic acidosis with insulin and intravenous saline and dextrose solution until the urine became acetone free. The next morning the chemical examination of the blood revealed sugar 115 mg., urea nitrogen 14.5 mg., creatine 1.5 mg. The lesion was treated locally with boric acid soaks, and sulfanilamide 15 grains (1 Gm.) every four hours was given by mouth.

In spite of treatment the local lesion became worse. At no time did the patient complain of any pain. The right portion of the upper lip to the midline and the adjacent skin of the cheek began to assume, rather suddenly, a purplish gangrenous hue on the second hospital day. The patient became semicomatose. The urine showed only a 2 plus sugar and no acetone, and the blood sugar was 286 mg. per hundred cubic centimeters. A blood culture taken at this time revealed a heavy growth of Staphylococcus aureus.

On the third hospital day the cheek and lip were definitely gangrenous, while the red lesion had spread to the right ear and down the right side of the neck. There was a slight discharge of pus from the center of the gangrenous area on the cheek. The patient died that afternoon.

Permission for necropsy was not obtained.

COMMENT

The diagnosis of diabetic gangrene of the face offers little difficulty once gangrene appears. Early it is mistaken for erysipelas. Brooks [7] and Ardeshir [8] specifically mention the resemblance of the lesions to erysipelas early in the course of the cases seen by them. The case described by Bulger [3] might very well have been diagnosed as erysipelas from the description of the lesion before gangrene developed. When gangrene develops, the lesion resembles the entity described by Meleney,[9] which he called hemolytic streptococcus gangrene of the skin, and must be differentiated from it. This also resembles erysipelas in its early stages, but in these cases a hemolytic streptococcus can almost always be recovered.

Diabetic gangrene of the face does not even remotely resemble the carbuncle seen in cutaneous infections in patients with diabetes. The dramatic change *en masse* of an erysipelatous lesion in a diabetic patient to a dusky, cyanotic, purple area, with or without the development of blisters or bullae, and the subsequent breakdown of tissue with the discharge of pus is the typical course of events.

Unlike diabetic gangrene of the extremities, age apparently plays no role in this type of gangrene. The youngest patient on record was 4 years of age, followed by one 8 years and two 10 years of age. The oldest was 65 years of age.

The underlying mechanism producing the gangrene must be quite distinct from that causing gangrene of the extremities in elderly diabetic patients, in whom chronic obliterative arterial disease is of prime importance. There are several factors to be considered in a discussion of the causes of this type of gangrene. There is devitalized tissue in a patient who is susceptible to infection because of his diabetic condition. Trauma

8. Ardeshir, K.: Diabetic Gangrene of the Nose, Lancet **1**: 1256 (June 26) 1926.
9. Meleney, F. L.: Hemolytic Streptococcus Gangrene, Arch. Surg. **9**: 317 (Sept.) 1924.

to the skin, however slight, with the ever present staphylococcus, may be a precipitating factor. An acute arteritis, together with inflammation and edema in a small space, can conceivably lead to thrombosis of the small branches supplying the skin, with subsequent necrosis of the tissue and ensuing gangrene.

The organism found in our two cases was Staphylococcus aureus, which was recovered from the facial lesions and blood stream in both, and from the metastatic abscesses in the lungs of the patient who came to necropsy. The staphylococcus was obtained on smear from the vulva in Elkin's case, and a hemolytic Staphylococcus aureus was obtained on culture from the facial lesion in Bulger's case. Riven obtained pure cultures of Staphylococcus aureus from the blebs in his case of diabetic dermatitis gangraenosa.

From the standpoint of prognosis, gangrene involving parts of the face in diabetes is not necessarily fatal. Patients with lesions which involved the nasal septum and turbinates, the hard palate, the eyelids, the skin of the nose and ears and even the lip have recovered. Bulger [9] cites the case of an elderly physician with gangrene of the right half of the tongue who was living in good health five years after the excision of the gangrenous area. Only one case involving the septum and turbinates ended fatally (Bower's case 1, which was in the preinsulin era). All cases involving the cheek, including the two cases herein reported, were fatal.

The complications encountered in the cases presenting lesions involving the cheek are dependent on the route followed by the infection through the veins draining the area. If the drainage is into the general circulation, septicopyemia and metastatic abscesses are the result. However, should the infection drain into the veins leading inside the skull, cavernous sinus thrombosis, meningitis and abscess of the brain may follow. These complications are usually fatal. Complications reported with lesions on other parts of the face are the results of spread by continuity of tissue. Morris's [10] case involving the turbinates and septum was complicated by the involvement of the adjacent sinus and the third, fourth, ophthalmic branch of the fifth, and the sixth nerves. Brier's [11] case involving the skin of the ear and the area anterior to it was complicated by involvement of the fifth and seventh nerves. Ardeshir's [8] case of gangrene of the skin of the nose was accompanied by destruction of the underlying cartilage of the ala nasi.

Treatment in these cases is both general and local. General treatment consists of combating the diabetes and its complications with insulin, dextrose and fluids. The toxemia can be attacked by forcing fluids. Staphylococcus bacteriophage and antitoxin, if available, can be tried against the septicemia. Transfusions and other supportive measures must be instituted. The local treatment, except when the lesion involves the cheek, is to promote drainage and remove slough. For lesions on the cheek the policy of nonintervention seems to be the accepted surgical procedure, although the results obtained by this form of treatment are uniformly fatal. Roentgen irradiation may be tried directly over the affected area.

10. Morris, A. G.: Gangrene of the Middle Turbinate and Sequestration of the Nasal Septum, New York State J. Med. **24**: 987 (Dec.) 1924.
11. Brier, A. J.: Diabetic Gangrene of Face and Ear Complicated by Fifth and Seventh Nerve Involvement, J. A. M. A. **103**: 1704 (Dec.) 1934.

SUMMARY

1. Two cases of diabetes mellitus and staphylococcic gangrene of the face reported were fatal.

2. There is a close resemblance of the facial lesion to erysipelas in its early stages and to hemolytic streptococcic gangrene of the skin in its later stages. The differential diagnosis is made by studying the organisms involved.

3. Internists and surgeons should both be aware of this complication of diabetes mellitus from the standpoint of prognosis.

4. Diabetic gangrene of the face is not necessarily a fatal disease unless the cheek is involved, with subsequent spread of the infection into the general circulation with metastasis and death.

IMMUNIZATION AGAINST PERTUSSIS

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The prevention of pertussis is today one of the main problems of the pediatrician and school physician. Isolation of the patient as a means of preventing the spread of this disease has in general been ineffective. The nonspecific character of the cough during the catarrhal stage—which Lawson [1] has shown is the most infective period—makes early diagnosis virtually impossible. The cough plate is the only means of making an early diagnosis. By it atypical cases are also discovered. There are many of the latter, as the more general use of cough plates now indicates. Valuable as this procedure is, it is obviously impracticable to take plates of all children and adults with coughs. A decreased morbidity and mortality from pertussis—which now is responsible for more deaths than any other epidemic disease with the exception of influenza—can be expected only when a potent immunizing agent is obtained.

Evidence on the value of pertussis vaccine is notoriously conflicting. Since the introduction of vaccine made from freshly isolated (phase I) strains by Meyer and his associates [2] and by Madsen,[3] several favorable reports have appeared. The numerous encouraging reports of Sauer [4] and of some others [5] using the Sauer vaccine (a phase I vaccine) have stimulated widespread interest. The excellent controlled field study at Grand Rapids under the leadership of Kendrick [6] has provided unequivocal evidence that

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This study was aided by a grant-in-aid from the National Research Council.

1. Lawson, G. M.: Epidemiology of Whooping Cough, Am. J. Dis. Child. **46**: 1454 (Dec.) 1933.
2. Meyer, A. H.; Kristensen, M., and Sörensen, E.: Acta paediat. **4**: 21, 1924.
3. Madsen, Thorvald: Boston M. & S. J. **192**: 50 (Jan. 8) 1925.
4. (*a*) Sauer, L. W.: Whooping Cough, J. A. M. A. **100**: 239 (Jan. 28) 1933; (*b*) J. Pediat. **9**: 120 (July) 1936; (*c*) Municipal Control of Whooping Cough, J. A. M. A. **109**: 487 (Aug. 14) 1937; (*d*) Present Status of Preventive Inoculations Against Whooping Cough, Am. J. Dis. Child. **54**: 979 (Nov.) 1937.
5. Daughtry-Denmark, Leila: Studies in Whooping Cough, Am. J. Dis. Child. **52**: 587 (Sept.) 1936. Kramer, J. G.: J. Pediat. **12**: 160 (Feb.) 1937.
6. Kendrick, Pearl, and Eldering, Grace: Am. J. Pub. Health **26**: 8 (Jan.) 1936. Kendrick, Pearl: J. Pediat. **9**: 117 (July) 1936. Kendrick, Pearl, and Eldering, Grace: A Controlled Study in Pertussis Immunization, read at the annual meeting of the American Public Health Association, Kansas City, Mo., Oct. 25, 1938, to be published.

immunization can be accomplished with phase I strains. On the other hand, Doull, Shibley and McClelland,[7] using a phase I vaccine prepared in a slightly different manner, failed to confirm the results of Sauer and Kendrick. Furthermore, Seigel and Goldberger,[8] using a commercial preparation of Sauer's vaccine, found that under conditions of intense and prolonged exposure protection was not clearcut.

The following field study was undertaken in an attempt to contribute evidence to this perplexing problem. In size and detailed investigation it is not comparable to the studies of the Grand Rapids group [6] or to the Cleveland group.[7] It is, however, well controlled and is sufficiently large for statistical analysis.

MATERIAL

Only infants and little children from 6 months to 30 months of age were studied. The majority were under 1 year. All were attending the Stanford University Well Baby Clinic. Beginning in October 1935 a number of infants were injected every month. Each month a similar number of infants of the same age distribution was selected by chance. These served as controls. No attempt was made to select infants with older brothers or sisters who had not had pertussis.

The vaccine used was an unwashed suspension of freshly isolated phase I strains of Haemophilus pertussis grown on human blood Bordet-Gengou medium.[9] It was first standardized to contain 10,000 million organisms per cubic centimeter. Later the suspension supplied contained 20,000 million organisms per cubic centimeter. A total dose of 80,000 million organisms was used, i. e. 8 cc. of the first product and 4 cc. of the second product. This dose was divided into 20,000 million, 30,000 million and 30,000 million organisms and given at weekly intervals. (Occasionally the intervals were longer.) No child was considered to have entered the "test" group until the day after the last injection. Four instances of systemic reaction to the vaccine were observed. Fever lasted for one day.

The parents of infants in the injected or "test" group and of those in the control group were instructed to notify the clinic of any known exposure to pertussis. They were also requested to bring the patient in any time that any cough developed. The members of both groups were seen in the clinic or in the home at intervals of from three to six months. When patients were lost they were declared out of the group as of the day last seen. When pertussis developed the patient was declared out of the group as of the day of onset.

The criteria of exposure which were used were as follows:

1. The test or control infant must have played with a coughing child in the first three weeks of pertussis for at least one hour indoors.

2. The test or control infant must have played with a coughing child in the first three weeks of pertussis at least two hours outdoors.

3. If the duration of the contact was less than this, the parent must have seen the coughing child cough directly into the exposed child's face from a distance of less than 2 feet. (There were only two such transient exposures that resulted in escape—one in the test group and one in the control group.) No child in this study was known to have been exposed more than once.

4. An "unknown exposure" is one that must have occurred when pertussis develops in a child without any known exposure.

The criteria for the diagnosis of pertussis were (1) typical whooping cough with whooping and post-tussic vomiting (cough plates and blood counts were not done in all obvious cases); (2) cough without the typical picture but in which positive cough plates were obtained.

It will be noted that three "possible" cases are included in the tables—two in the test group and one in the control group. These attacks of cough were not typical of pertussis. Cough plates were negative in

TABLE 1.—*Results in Test and Control Series for Entire Period of Study*

		Number			Net Strength[10]	Child Months at Risks[11]	Exposures			Cases	Escapes	Communicability Rate, per Cent	Attack Rates, per Cent		
		New	Lost	Total			Known	Unknown	Total				Per Net Strength	Per Child Month at Risk	Crude
October 1935 through March 1936	Test....	46	0	46	23.0	124.0	0	0	0	0	0	.....	....	....	....
	Control	40	0	40	20.0	145.0	0	0	0	0	0	.....	....	....	....
April 1936 through September 1936	Test....	28	0	74	60.0	357.5	1	0	1	0	1	0	0	0	....
	Control	30	4	66	55.0	327.0	1	2	3	3	0	100.0	5.45	0.91	....
October 1936 through March 1937	Test....	50	6	118	98.0	608.0	6	1	7	4	3	57.1	4.08	0.66	....
	Control	37	9	94	81.0	503.0	1	1	2	1	1	50.0	1.23	0.20	....
April 1937 through September 1937	Test....	39	29	128	123.0	750.0	13	0	13	2	11	15.4	1.62	0.27	....
	Control	40	20	114	109.0	621.0	7	5	12	10	2	83.3	9.26	1.61	....
October 1937 through March 1938	Test....	34	14	148	138.0	826.0	5	0	5	1	4	20.0	0.72	0.12	....
	Control	35	46	103	108.5	726.0	8	0	8	8	0	100.0	7.37	1.10	....
Total: October 1935 through March 1938	Test....	..	..	197	.....	2,665.5	25	1	26	7*	19	26.9	....	0.26	3.55
	Control	..	..	182	.....	2,322.0	17	8	25	22	3	88.0†	....	0.94‡	12.03§
Subsequent observations through July 1938 bring totals to	Test....	14	?	211	.....	.....	28	1	29	9	20	31.0	....	....	4.26
	Control	0	?	182	.....	.....	21	11	32	29	3	90.6¶	....	....	15.9#

* On the basis of child months at risk one would expect twenty-five cases in the vaccinated group, not seven.

For the period October 1935 through March 1938:

† Difference in communicability rates = 61.1 per cent with standard error = 13.9 per cent.

‡ Difference in attack rates per child month at risk = 0.68 per cent ± 0.18 per cent.

§ Difference in crude attack rates = 8.48 per cent with standard error = 2.73 per cent.

For the entire period of observation:

¶ Difference in communicability rates = 59.6 per cent with standard error = 12.4 per cent.

Difference in crude attack rates = 11.7 per cent with standard error = 3.0 per cent.

7. Doull, J. A.; Shibley, G. S., and McClelland, J. E.: Am. J. Pub. Health **26**: 1097 (Nov.) 1936.

8. Siegel, Morris, and Goldberger, Esther W.: Active Immunization of Tuberculous Children Against Whooping Cough with Sauer's Vaccine, J. A. M. A. **109**: 1088 (Oct. 2) 1937.

9. Supplied by the Cutter Laboratories, Berkeley, Calif.

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two of them and the third child was not seen until she had recovered from her cough. They are included, however, because their histories are suggestive.

Table 1 classifies at intervals of six months the number of children entering each group and the number leaving each group. It also shows the "net strength" [10] of each group in each six month interval and the "child months at risk" [11] during each interval. It is evident that the number of controls lags somewhat behind the number of test children. The child months at risk for the control group likewise lags behind that for the test group except in the first six month interval. Control children were found somewhat more difficult to follow.

RESULTS

The results are summarized in table 1. The data are complete through March 1938. During the four months from April 1 to Aug. 1, 1938, some additional exposures and cases occurred but the follow-up data are incomplete and the figure for child months at risk during this period is unknown.

In the two and one-half year period from October 1935 through March 1938 there were in the test group twenty-six exposures followed by nineteen escapes and seven cases of pertussis, two of which are questionable. The ratio of exposures to cases—communicability rate—is therefore 26.9 per cent. For the same period of time there were in the control group twenty-five exposures followed by three escapes and twenty-two cases (one of which is questionable), giving a communicability rate of 88 per cent. The difference in these rates is 61.1 per cent with a standard error of 13.9 per cent. The standard error is less than one third of the difference, i. e., the difference is significant. The four subsequent months of observation, until August 1938, slightly increased the communicability rates in both groups, yielding a difference in rates of 59.6 per cent with a standard error of 12.4 per cent. This difference is likewise significant.

The wide difference in the ratio of exposure to disease in these two strictly comparable groups constitutes proof that the vaccine protected most of the children who received it. The difference in the attack rates in the two groups is obviously corroborative, being also statistically significant. Comment is unnecessary. The communicability rate is a more important index than the attack rate.

A comparison of the type of exposures in the test and control groups is made in table 2. A familial exposure is the most rigid test of immunity. In each group nine familial exposures happened to occur. Six vaccinated children escaped and a seventh had "bacteriologic whooping cough" without paroxysms or vomiting.

The three children who were attacked had been vaccinated at least eighteen months previously. The majority who escaped had been vaccinated for one year or less.

The three escapes occurring in the control group occurred after exposure of one day or less.

There were eleven instances of cases occurring without known exposure in the control group and only one occurring in the test group. It is probably fair to assume that as many unknown exposures actually did occur in the test group as in the control group, for the child months at risk were somewhat greater in the test group. This assumption would increase the number of exposures in the test group from twenty-nine to thirty-nine. The ratio of attack to disease would thus be from nine to thirty-nine and the communicability rate 23.0 per cent.

A classification of the types of cases noted is shown in table 3. The "mild cases" were all verified by positive cough plates or hyperlymphocytosis. The "atypical cases" were diagnosed only because positive cough plates were obtained. The "possible" cases were unproved atypical cases, as was previously mentioned. Perhaps they should be omitted. Such an omission would alter the figures in favor of the test group.

No deaths occurred during the study. Only three cases of atypical pertussis occurred in the test group —two of these after familial exposure of one week

TABLE 2.—*Classification of Exposures*

		Resulting	
		Cases	Escapes
Familial exposure for one week or more			
In test group	9	3*	6†
In control group	9	9	0
All other known exposures			
In test group	19	5	14
In control group	12	9	3
Unknown exposures			
In test group	1	1	..
In control group	11	11	..

* Vaccination performed 18 months, 18 months and 20 months previously; one of these cases was atypical.
† Vaccination performed 5 months, 5 months, 8 months, 12 months, 12 months and 20 months previously.

TABLE 3.—*Types of Cases*

	Severe	Typical	Mild	Atypical	Possible	Total
Test group	0	3	2	2	2	9
Control group	3	20	4	1	1	29

or more. These three children had been vaccinated fourteen months, eighteen months and twenty months previously. Twenty-three typical or severe cases occurred in the control group.

COMMENT

The foregoing remarks with regard to type of exposures and type of cases enhance the evidence obtained by a simple comparison of the communicability rates in the two groups. This evidence implies that the vaccine used conferred complete protection on some of the children and partial protection on others. Typical pertussis was seen in only three vaccinated children. They had been vaccinated more than one year previously.

We believe that annual reinjection with a small amount of vaccine is advisable. A solid antibacterial immunity of duration comparable to artificially produced antitoxic immunities cannot be expected. It has not been realized with typhoid or plague vaccines. Until a test of immunity against pertussis is devised, annual or at least biennial reinjection with a fractional dose would therefore seem empirically reasonable.[12]

10. "Net strength" is a value used by Doull and his associates [7] which consists of the number registered at the end of the preceding six month period minus any in whom pertussis has developed plus one half of the newly enrolled and minus one half of those lost.

11. Child months at risk is the product of the number of children enrolled and the months during which they were enrolled. (A child enrolled for the full six months of each interval would furnish therefore six "child months at risk.")

12. A small number of children in the test group were reinjected with 40 billion organisms in April, May and June 1938. It so happened that none of these have been exposed since reinjection.

The time required after the administration of vaccine for the development of immunity is not known. Sauer [4a] believes that three months is necessary. Schermerhorn [13] has recently presented evidence from Kendrick's study indicating that protection develops more rapidly. Madsen [3] has also held this opinion. In our small field study the following observations have some bearing on this point:

In the vaccinated group:

A prolonged familial exposure beginning fourteen days after completion of vaccination resulted in an escape.

A transient indoor exposure nineteen days after completion of vaccination resulted in an atypical case.

A similar exposure twenty-six days after completion of vaccination resulted in a possible case.

An outdoor exposure four months after vaccination resulted in a mild case.

Two prolonged familial exposures five months after vaccination resulted in escapes.

This information is recorded without comment because of its brevity. No conclusions are drawn.

The dose of 80,000 million bacterial organisms used in this field study is that advised by Sauer [4d] for children under 3 years of age. It is also essentially that used by Kendrick and Eldering.[6] Silverthorne [14] has recently observed almost perfect protection with a dose of 120,000 million organisms. It would seem that the quantity used is of great importance. Sauer's recommendation of a dose greater than 80,000 million organisms for older children seems rational. It is obvious that a determination of the proper dosage can only be empirical until a test for immunity is developed.

The results herein reported have been paralleled with the same vaccine in the same community by those of Singer-Brooks.[15] In a slightly larger vaccinated group she found a communicability rate similar to ours.

SUMMARY

Immunization against pertussis was attempted in a well baby clinic. Two hundred and eleven infants were vaccinated with an unwashed phase I vaccine in a total dose of 80,000 million organisms. One hundred and eighty-two infants were followed as controls.

During a period of thirty-four months there occurred twenty-nine exposures in the vaccinated group followed by nine cases and twenty escapes. During the same period thirty-two exposures occurred in the control group followed by twenty-nine cases and three escapes. The difference of 59.6 per cent with a standard error of 12.4 per cent in the resultant communicability rates was statistically significant.

Of the nine cases occurring in vaccinated children only three were typical. In these instances vaccine had been administered fourteen months or more previously. The other six cases occurring in vaccinated children were mild, atypical or questionable. Of the twenty-nine attacks occurring in the control children three were severe and twenty were typical. No deaths occurred in either group.

These observations indicate that the vaccine used conferred either complete or partial protection on the great majority of those inoculated.

Annual reinjection with a fractional dose of vaccine is advisable.

Since this manuscript was submitted one case has occurred in the test group. One case and one escape have occurred in the control group. The current communicability rate in the test group is 28 per cent as compared to 85 per cent in the control group.

2398 Sacramento Street.

13. Schermerhorn, L. J.: Round Table Discussion at the Meeting of the American Academy of Pediatrics, Del Monte, Calif., June 1938; J. Pediat. **13**:279 (Aug.) 1938.

14. Silverthorne, L. N., and Fraser, D. T.: Canad. M. A. J. **38**: 556 (June) 1938.

15. Singer-Brooks, Charlotte H.: Round Table Discussion at the meeting of the American Academy of Pediatrics, Del Monte, Calif., June 1938; J. Pediat. **13**:292 (Aug.) 1938.

Clinical Notes, Suggestions and New Instruments

AN OUTBREAK OF ANTHRAX INFECTION IN MINKS WITH INFECTION OF A RANCH OWNER

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Anthrax infection in cattle, sheep, goats and horses has long been recognized as a potential source of human infection, and appropriate measures have been taken to protect the public against this danger. As a result of such measures, the incidence in human beings has been greatly lowered, perhaps to an irreducible minimum in many parts of the world. The anthrax bacillus is also known to be pathogenic for rabbits, guinea pigs, rats and mice, while dogs, swine, cats, birds and cold-blooded animals are relatively insusceptible. The susceptibility of the mink, as far as can be learned, has not previously been reported.

In recent years the artificial breeding of minks has become an industry of considerable importance, and ranches of from 100 to 2,000 minks are widely scattered through the country, especially in the Northern states. Standard diets for these animals include fish and meat, usually horse meat because of its low price. Foxes, which are of even greater commercial importance than minks, are also large consumers of inexpensive horse meat, but no reports concerning their susceptibility to anthrax are available.

Several unusual hazards for man are associated with the occurrence of anthrax infection in minks. In the first place, the common practice of removing the pelts from any animals which die suddenly makes ranch workers extremely liable to infection, since this operation is carried out with bare hands and arms, often with the continuity of the skin broken as a result of mink bites and other types of trauma. Mink skins taken off under these conditions have in the past been sold without restriction. It seems probable that this practice introduces a serious hazard not only for the subsequent handlers of the pelts and garment workers but also for the ultimate consumer. The contact of infected mink fur with the unprotected skin in the region of the neck must be regarded as particularly dangerous.

For these reasons it seems desirable to report the following experience, which occurred incidentally to the routine microscopic examination of mink tissues for the diagnosis and control of mink distemper:

Oct. 29, 1938, a ranch owner brought to the laboratory a number of dead minks which he said were in excellent health on the preceding evening but had died suddenly with convulsions and bloody diarrhea. During that day and the two following days he lost fifty-eight animals, representing more than half of his herd. Distemper and most other common causes of death in minks were ruled out on the basis of this clinical picture. It was felt that botulism was a strong possibility, since this disease has been previously reported in minks, and as a very remote possibility equine encephalomyelitis was considered, because of the recent epidemic of that disease in horses and human beings in the locality.

Autopsy was done on one mink, and all tissues, including the brain, were fixed in solution of formaldehyde. Bacteriologic studies were not made at this time. The only obvious

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gross pathologic changes were a small amount of blood in the large intestine, a greatly enlarged, deep red spleen and cerebral congestion.

Five days later, examination of hematoxylin and eosin stained sections of tissues from this animal showed enormous numbers of large square-ended bacilli in the blood vessels of all organs. Since the tissues of this mink were fixed only a few minutes after death, the diagnosis of anthrax seemed likely and the mink rancher was warned of this probability. Unfortunately, he had pelted the last of his dead animals only a few hours previously.

The carcass of one of his minks was obtained, as were also three minks from another ranch on which a number of deaths with an apparently identical clinical picture had occurred. The postmortem picture of all four of these minks was identical with that just described, except that in one animal the spleen was much smaller, opaque yellowish white and caseous in appearance, apparently as a result of total infarction. The blood and tissues of all four animals contained large numbers of anthrax bacilli. Pure cultures of the anthrax bacillus were obtained from the spleens of all four animals, and two of these cultures proved fully virulent for mice and guinea pigs.

The dietary factor common to these two ranches and to a third ranch on which similar deaths occurred was found, on investigation, to be horse meat bought from the same dealer. A large piece of this meat, which had been buried by the rancher who brought in the first dead minks, was unearthed for study. After it had been cut in two and the cut surface seared, small fragments were removed for culture and animal inoculation. Smears and paraffin sections showed many typical anthrax bacilli. Cultures were positive for anthrax and injection into guinea pigs produced typical anthrax infection and death within forty-eight hours.

The dealer from whom the horse meat was purchased was quoted as having said that he killed a sick horse, which he used for making fertilizer, and later killed and butchered on the same floor an apparently well horse, the meat of which he sold to the mink ranchers. It is perhaps theoretically possible that meat from a healthy animal might become infected in this manner, but it seems more likely that the apparently well horse was in reality infected. In any case it was clear that the minks on two ranches and probably also on a third ranch had died of anthrax from the ingestion of infected horse meat purchased from this dealer.

The ranch owner first mentioned, three days after pelting the last of his minks, noticed a small lesion developing on the dorsum of his right hand. This lesion, when first seen, November 6, was 5 mm. in diameter, with a dark red, rather scablike center and a raised, almost white periphery. There were several abrasions on the hand and arm. Although there was no redness and but little tenderness or surrounding edema, the presence of minute blebs, visible only with a hand lens, around the elevated margin of the lesion, together with the history outlined, raised a strong suspicion of anthrax infection. Immediate hospitalization was advised.

After he entered the Peter Bent Brigham Hospital, the appearance of the lesion became typical of anthrax within thirty-six hours, and a definite bacteriologic diagnosis was made by withdrawing fluid from a bleb with a fine capillary pipet. Under conservative treatment, with the administration of 600 cc. of serum in repeated doses and two injections daily of 0.6 Gm. of neoarsphenamine, the patient made a complete recovery, which was uneventful except for a moderately severe serum reaction, with urticaria of forty-eight hours' duration. There was no febrile reaction at any time and only slight enlargement and tenderness of the axillary lymph nodes.

The frequency of anthrax infection in minks in the past and the chances of its occurring on a large scale in the future cannot be definitely stated at present. Sudden loss of a large number of minks on a ranch is by no means an infrequent occurrence, and since the possibility of anthrax in these animals has apparently not been pointed out before, it is probable that this infection has occurred in the past without being recognized and that infected pelts have been sold without the knowledge of seller, purchaser or ultimate consumer. Occasional human infections of this origin may also have escaped recognition. It is of interest that the carcass of one of the fifty-eight dead minks aforementioned, which in all probability was heavily infected with anthrax bacilli, was submitted by the local veterinary to the veterinary department of a large commercial laboratory. The report returned was a frank admission that a diagnosis had not been made, in spite of careful study.

In view of the probability that the experience detailed does not represent an isolated occurrence, it is suggested that state boards of health or other proper authorities might advisedly take steps to safeguard those engaged in the mink industry, as well as the general public, against the dangers implied. The important steps would appear to be (1) more careful inspection of slaughterhouses selling horse meat to fur farms, (2) a warning to fur farmers not to pelt animals dying suddenly until the possibility of anthrax infection has been excluded and (3) burning or careful disinfection of carcasses, pelts and other contaminated objects when the diagnosis of anthrax has been established.

FRACTURE-DISLOCATION OF AXIS AND ATLAS IN AN INFANT

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Extensive search of the literature has failed to yield any report of a condition similar to the one to be described. Treatment of the condition is evidently rare, probably owing to the small number of infants relative to the general population, to their sheltered lives and to the great opportunity for death to follow the injury before treatment can be applied. We have found our case interesting from the standpoints of cause, diagnosis and therapy.

REPORT OF CASE

A 4½ months old, poorly nourished white boy was rushed into the emergency room of the hospital by an excited father, who asserted that the boy had just been severely shaken by him. The house physician present at once recognized that the child was dying. He sent the nurse into the halls to look for the nearest attending surgeon, while he went about examination of the infant's chest and the administration of oxygen by means of a funnel. One of us (R. D. P.) was immediately available. No abnormality of the chest was reported; respiration was irregular and poor, and there were cyanosis and generalized tonic spasm. Traction on the head with counterforce to the pelvis abolished spasm and allowed apparently normal respiration, while relaxation of traction resulted in a return of signs of pressure on the medulla and the cord.

Clinical opinion was that probably fracture-dislocation of the atlas and axis existed. While traction and countertraction were carefully maintained, the infant was wheeled to the x-ray department, where lateral and oblique views were taken. These showed an anterior dislocation of the axis in relation to the atlas and fracture of the spinous process of the third cervical vertebra.

Treatment was instituted without interruption of the stretching of the neck. A halter for the head was fashioned of adhesive tape; the patient was laid on a firm mattress, with the head of the bed elevated; a small pillow was placed under the shoulders to aid in maintaining hyperextension, and countertraction was maintained at the pelvis. This treatment continued for two weeks (during much of which time oxygen was used and the tent was always in place); then clinical and x-ray evidence showing that reduction was maintained, a plaster Thomas collar was applied. After three weeks this was replaced with a leather and steel collar, which was permanently discarded after four weeks. At the time of writing, three months after injury, the patient has apparently completely recovered from the trauma. Motion of the neck is normal and there are no neurologic signs.

COMMENT

This child cried till its father became so provoked that he grasped it by the pelvis and shook it severely. The forceful hyperextension and hyperflexion of the neck produced not only

From the Norwalk General Hospital.

the fracture-dislocation but, in the opinion of the neurologist, a traumatic encephalitis due to punctate hemorrhage of the brain.

Stress is laid on the value of history in the diagnosis of this condition. The objective signs presented were those common to a large number of conditions not the result of trauma, so that it is hardly likely that the correct diagnosis would have been made in this case had not the history of trauma led to the application of traction to the head, with the result that an almost dead patient began immediately to revive.

This case illustrates the value of care to prevent undue motion during x-ray examination and other diagnostic procedures wherever a fracture is suspected, especially in the spine and more especially in the cervical portion of the spine. Had traction been interrupted in this case during transportation about the hospital or during x-ray examination, it is believed that the patient would not have survived.

SUMMARY

In an infant, fracture-dislocation of the atlas on the axis would probably not have been diagnosed except by the aid of the history of trauma.

Where signs are such as can result from intercranial pressure or from pressure on the cord, and their degree is such that life is imminently threatened, fracture-dislocation in the cervical region should be considered; traction applied to the head may be life saving.

The value of splinting fractures during transportation and x-ray examination has been illustrated.

Definitive treatment of fracture-dislocation of the atlas on the axis by conservative means has resulted in an apparently complete cure in a 4½ months old child.

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A CASE OF HYPERCHROMIC MACROCYTIC ANEMIA REFRACTORY TO LIVER EXTRACT

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This case of hyperchromic macrocytic anemia was fatal and is being reported here to illustrate some interesting features in differential diagnosis.

REPORT OF CASE

A woman aged 62 was in fairly good health except for hypertension until five months before admission to the hospital. At that time she noted unusual dyspnea on exertion, pallor and weakness, all of which increased rapidly within the following three months. Her physician found severe anemia with a high color index in the face of a normal gastric acidity, the figures being total acid 75 and free acid 58. X-ray examination of the gastrointestinal tract was negative. Since liver therapy and other measures did not yield a favorable response, she was referred to the hospital. Here one of us (D. G.) elicited the additional fact that she had received radiation therapy eight or ten times to the left breast for a bloody discharge from the nipple some ten years previously. The patient could barely speak from weakness and was unable to elaborate any further on this history.

On examination in the hospital, the following relevant conditions were noted: Very marked weakness and pallor, with moderate jaundice, were present. The temperature varied between 100 and 101 F. The red cell count was 1,350,000 and hemoglobin was 34 per cent, giving a color index of 1.26. Leukocytes numbered 6,980 and the differential count showed neutrophils 64 per cent, lymphocytes 34 per cent, eosinophils 1 per cent. Blood platelets numbered 40,000. The smear showed anisocytosis with many macrocytes. There were hyperchromia and polychromasia. There were poikilocytes, normoblasts and macroblasts. The reticulocyte percentage was 6, the patient having had liver therapy before admission to the hospital.

From the medical service of Dr. David Greenberg, Jewish Memorial Hospital.

Bone marrow, by sternal puncture, showed increased megaloblastic activity with diminished numbers of normoblasts. Leukoblastic activity was normal. The number of megakaryocytes was diminished.

The icteric index was 23. The van den Bergh test gave a delayed direct reaction. Urobilinogen in the urine was increased. The fragility test showed beginning hemolysis at 5 and complete hemolysis at 4.

Bence Jones protein was absent from the urine. There was no nitrogen retention and no diabetes mellitus. There was no glossitis or atrophy of the tongue and no definite evidence of involvement of the spinal cord. The spleen, liver and lymphatic glands were not enlarged. There was no gross or occult bleeding from the gastrointestinal tract. The feces showed no ova or parasites. Pelvic examination revealed no bleeding or evidence of a malignant condition. There was no bleeding from any of the mucous membranes, nor was there evidence of a malignant growth anywhere that might have accounted for the anemia.

The patient on admission and every few days thereafter received a blood transfusion of from 250 to 500 cc. The transfusions did not halt the downward trend. Concentrated liver extract intramuscularly was given daily in doses of from 1 to 6 cc. throughout her period of hospitalization, which was three weeks. There was a reticulocyte response up to 14 per cent after seven days of liver extract. This was encouraging, but the bone marrow failed to follow through with an increased output of red cells. On the contrary, each few days brought a steady decline in red cells and hemoglobin content, so that one week before death the red cells numbered 560,000 and the hemoglobin was 17 per cent, the color index 1.5, and the leukocytes numbered 11,700 with 74 per cent neutrophils.

COMMENT

The tentative diagnosis in the very beginning of our study was pernicious anemia, for this was indeed a severe macrocytic hyperchromic anemia, with evidence of destruction of the red blood cells, increased activity of the megaloblastic marrow and the usual alterations of the red cells in the peripheral blood. However, the presence of hydrochloric acid in the stomach, the absence of lingual signs, the absence of definite neurologic changes, the absence of the usual leukopenia and granulocytopenia and, above all, the failure to respond to hemopoietic principle all served to show that this macrocytic anemia was not pernicious anemia.

It is now generally accepted that the hemopoietic principle is absolutely necessary for the physiologic maturation of the megaloblast. An inadequate supply of it results in a macrocytic hyperchromic anemia. It is formed in the stomach by the action of the intrinsic factor—an enzyme hemopoietin secreted by the gastric mucosa—on the extrinsic factor which is present in proteins. It is not formed in pernicious anemia because of the failure of the gastric glands to secrete the intrinsic factor. This failure to secrete intrinsic factor is practically always associated with a failure to secrete free hydrochloric acid.

Since in the case reported here there was normal gastric acidity, it is safe to assume that there was no deficiency in hemopoietic principle.

In spite of a normal gastric acidity and normal production of hemopoietic principle, the bone marrow may still be unable to mature the megaloblast, and a hyperchromic macrocytic anemia may result because of a deficient delivery of the hemopoietic principle to the bone marrow, which may occur in the following three situations:

1. Diminished absorption from the intestine. Examples are sprue, idiopathic steatorrhea of adults and intestinal parasites, such as fish tapeworm.

2. Defective storage in the patient's liver. Examples are cirrhosis of the liver, acute toxic hepatitis and acute yellow atrophy.

All the clinical conditions listed under 1 and 2 were effectively ruled out by the absence of supporting history, physical signs and laboratory data. Furthermore, they were all ruled out by the failure of our patient to show a favorable physio-

logic response to adequate dosage of parenteral liver extract, for the anemia in all these conditions does respond to liver extract.

3. Defective utilization of the hemopoietic principle by the bone marrow even though enough of it is made in the stomach, enough absorbed from the intestine and enough stored in the liver

This is a definite clinical syndrome and was named achrestic anemia by Israëls and Wilkinson.[1] It is a fatal hyperchromic macrocytic anemia. Like pernicious anemia, it has a megaloblastic marrow with similar changes in the red cells of the peripheral blood, but it differs in that the leukoblastic function of the marrow is usually normal, so that there is no leukopenia or granulocytopenia. Furthermore, there are no achlorhydria, no changes in the tongue, no digestive disorders, no involvement of the nervous system and no enlargement of the spleen or liver. The reaction to the van den Bergh test varies. It is usually negative and occasionally delayed direct or indirect. Finally there is no physiologic response to adequate administration of liver extract beyond a transient reticulocytosis. There is an adequate supply of hemopoietic principle in the patient's liver, for extracts made from such a liver post mortem are just as effective as commercial liver extracts in the induction of remission in pernicious anemia. The bone marrow of these patients is deprived of hemopoietic principle in spite of an adequate supply in the liver. According to Israëls and Wilkinson these patients are unable to utilize the hemopoietic principle for any one or a combination of the following three reasons:

1. Failure to mobilize the hemopoietic principle from the tissue stores.

2. Deficiency of some undiscovered factor.

3. Utilization prevented by an inhibiting factor.

Our case fits into this syndrome—achrestic anemia—very well and that diagnosis is highly probable. Final proof can be obtained only by extracting the patient's liver post mortem and showing that it contains an adequate supply of hemopoietic principle, and further demonstrating the absence of a lesion of the bone marrow which irritates the erythropoietic tissue resulting in increased megaloblastic activity, such as myeloid leukemia. The latter was ruled out by the absence of an enlarged spleen, the absence of immature granulocytes in the peripheral blood and the presence of normal leukoblastic tissue in the marrow.

Finally it is necessary to consider whether maturation of the megaloblast was disturbed or impeded by previous radiation therapy. The effects of radiation are shown classically by leukopenia with granulocytopenia, thrombocytopenia and dyshemopoiesis. The red blood cells show but little evidence of regeneration. They are normal in size and show but little polychromasia or poikilocytosis. Hemorrhagic phenomena are prominent as well as are tendencies to necrosis of the mucous membranes. However, in the individual case not all the elements of the marrow need be injured simultaneously or equally. It is conceivable that a susceptible marrow might be injured by radiation therapy in a selective manner, causing dyshemopoiesis without dysmyelopoiesis but with depression of the megakaryocytic function, thus giving the picture found in our case. Rhoads and Barker [2] in a recent paper described cases of aplasia showing macrocytosis with alteration in the shape of the red blood cells varying from normal to profound. Whitby and Britton [3] as well as Lescher and Hubble [4] find a high color index. Some of these cases of aplasia therefore may be confused with hyperchromic macrocytic anemias because the precursor cells are produced normally but their maturation is interfered with.

The final diagnosis in this case therefore rests between this somewhat unorthodox conception of aplasia and the picture of achrestic anemia with which this case harmonizes so well. The weight of evidence, in our opinion, strongly favors achrestic anemia as described by Israëls and Wilkinson.

1166 Grand Concourse.

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2. Rhoads, C. P., and Barker, W. H.: Refractory Anemia, J. A. M. A. **110**: 794 (March 12) 1938.
3. Whitby, L. E. H., and Britton, C. J. C.: Disorders of the Blood, ed. 2, London, J. & A. Churchill, 1937, p. 352.
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Special Article

CONFERENCES ON THERAPY

THE CHOICE OF DRUGS

NOTE.—*These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital. The questions and discussions involve participation by members of the college staff, students and visitors.*

DR. HARRY GOLD: It is a major accomplishment in drug therapy to be able to select wisely from a host of preparations of the same fundamental drug, each differing from the other in minor properties and in major claims. At least three factors constitute the basis for selection: (1) sound pharmacologic evidence, (2) clinical experience which meets high standards of scientific evidence and (3) cost. This morning we shall have time to consider choice in but few of the major groups of therapeutic agents. Dr. Eggleston will consider choice among the digitalis preparations and the purine bases.

DIGITALIS; PURINE BASES

DR. CARY EGGLESTON: Today well standardized, reasonably uniform and trustworthy preparations of digitalis are commercially available in considerable numbers. Experience and pharmacologic studies seem to indicate that our choice of digitalis bodies should largely be limited to one for oral administration and one for intravenous administration, with immeasurably less emphasis on the problem of the choice, today at least, of one for parenteral administration other than intravenously.

Pharmacologic evidence shows quite definitely that there is no digitalis body for oral administration which is superior to digitalis leaf itself. Some of the partially purified extracts of digitalis are equally valuable, equally potent and equally useful, but for the most part they are considerably more costly to the patient, and so far as I am aware there is no satisfactory evidence to support the claim that they are in any way superior to digitalis leaf. An accurately standardized digitalis leaf, which is obtainable from any one of several manufacturers, is about all that is needed for oral administration. However, one should be certain of accurate standardization and that there are no false claims by the manufacturer and no slips from the straight and narrow path. We had an experience of a serious slip on the part of a manufacturer, which we feel was probably intentional and which resulted in considerable digitalis poisoning in the course of an experiment. We laid a little too much faith at the door of this manufacturer and accepted his statement as to the standardization of the digitalis. As a matter of fact, he was consciously supplying a preparation of digitalis that was more active than the standard of potency which he claimed and which he published on his labels. But any accurately standardized powdered leaf is likely to be thoroughly satisfactory for oral administration.

For intravenous administration there are a good many available digitalis extracts, most of which are more or less complex in composition. The most satisfactory in clinical tests appears to be not a digitalis extract but crystalline strophanthin-G or ouabain. This preparation has the advantages of solubility, small dose and relative uniformity, being a crystalline preparation.

Its dose is minute. The single dose should not exceed 0.5 mg. given to a patient who has not previously been digitalized within a brief period of time, say from ten days to two weeks. The complex digitalis extracts, among which are the proprietaries and specialties such as digifolin and digitan, may be used. I myself feel that very definite preference should be given to the crystalline strophanthin.

For intramuscular or subcutaneous injection there is, in my personal opinion, no satisfactory preparation because all the digitalis bodies which are in any way potent in their cardiac activities are more or less considerably irritant to the subcutaneous tissues. Furthermore, those which are sufficiently soluble in aqueous menstruums or in menstruums containing very small amounts of alcohol are generally composed of those portions of the digitalis glucosidal content which are rather untrustworthy in their absorption. Finally the digitalis bodies are for the most part not very well absorbed from the subcutaneous tissues irrespective of their composition. I have had the misfortune to witness rather serious necrosis of tissue and ulceration from the administration of digitalis bodies subcutaneously. Since, therefore, there is no particular advantage to the patient from the administration of digitalis bodies subcutaneously or intramuscularly, other than ouabain intramuscularly, in point of rapidity of action and certainty of absorption, it would seem to me to be wiser largely to limit our administration of digitalis either to the oral route or to the rectal route when the oral route is not available because of nausea or vomiting or similar factors, and the intravenous route in emergencies.

Digitalis is reasonably cheap if one uses preparations of the whole leaf which are official in the U. S. Pharmacopeia. It is often rather costly if one uses the proprietaries or specialties, which, as Dr. Gold has said, possess claims that are quite out of proportion to the merits of the preparation.

As to the xanthine derivatives I can speak with less confidence. It appears from evidence available as though most of the soluble xanthine derivatives were possessed of essentially the same actions, differing primarily in the intensity of the action and secondarily in their tendency to promote gastrointestinal irritation and to be ill tolerated by the gastrointestinal tract. It would be very nice were it possible to say that this preparation rather than one of the others was much less irritant to the gastrointestinal tract. There would not be much problem for choice. It has been my experience that choice must be directed to a considerable extent by the individual patient's ability to take the preparation. All the soluble xanthine derivatives are capable of irritating the gastrointestinal tract and producing digestive disturbances, even nausea and vomiting. Some seem to possess this disadvantageous feature to a lesser extent than others. The calcium double salt of theobromine appears to be one of these. In efficient doses aminophylline is often very well borne by the gastrointestinal tract. Theobromine with sodium salicylate is at times well borne. There are other occasions on which each of these is rejected by the gastrointestinal tract. Therefore we must, I think, make our selection by the effective but crude method of trial and error in any individual patient.

As for their potency, the theophylline derivatives appear to be more potent as diuretics than theobromine or than the other xanthine derivatives. That is about all I feel that we are justified in saying.

I should like to intrude on a subject that is coming up in a few minutes and while I am on my feet mention the question of morphine and other opium derivatives for hypodermic administration. It has been my observation and my experience that none of the substitutes for morphine possess any significant advantage over morphine itself for subcutaneous administration. Some are more potent, as for example dilaudid. They all have similar disadvantages in their capacity to produce nausea and vomiting and their high degree of toxicity in overdoses. I myself think that morphine, our old standby, in the majority of cases serves every desirable end in the opiate class for parenteral administration.

HORMONES OR ENDOCRINES

DR. EPHRAIM SHORR: Let us consider first the disturbances of the thyroid gland. The reasons for the early therapeutic success with the thyroid hormone lay in its oral efficacy. There has actually been little advance in its clinical application since 1892, when it was suggested that the fresh thyroid of a sheep fried slightly and served with currant jelly was an excellent mode of administration of the gland. Today we modify its administration only to this extent, that we defat and dry the gland and insist that the preparations adhere to definite standards of iodine content. It is not the purpose of this clinic to discuss the various indications for the use of thyroid substance and I will content myself with saying that, wherever there is an indication for thyroid therapy because of thyroid insufficiency uncorrectible by other means, the preparation of choice is any one of the dried thyroid substances which conform to the standards of the U. S. Pharmacopeia. Crystalline thyroxin is also available, but except for experimental purposes and for intravenous use when such seems unavoidable I do not think it has any place in general therapy. It is much less reliable when given orally than the dessicated thyroid preparations. A word of caution should be said with regard to the rapidity of thyroid replacement. In long-standing myxedema the readjustment to the higher level of cardiac activity should be brought about very slowly to avoid cardiac embarrassment.

It should be remembered that, unless thyroid insufficiency is due to atrophic changes in the gland, the gland is capable of elaborating its own thyroid hormone if given sufficient amounts of iodine. To permit this to occur it is merely necessary to administer relatively small amounts of iodine by means of any one of a number of iodine preparations. That used in this clinic is the syrup of hydriodic acid, which contains about 13 mg. of iodine in each cubic centimeter. One cc. a day is adequate. This preparation is more palatable and more convenient to take than compound solution of iodine (Lugol's solution). Furthermore, it is a personal gesture against the erroneous notion that the form of iodine contained in compound solution of iodine makes the latter superior to other iodine preparations.

The amount of thyroid hormone needed for complete replacement therapy in genuine myxedema is surprisingly small. It is indeed a rare case which will need more than 3 grains a day, and many do very well with less. The daily dose is best administered at one time and it serves no purpose and certainly causes inconveniences to divide the dose as is often done.

Quite distinct from the use of thyroid in replacement therapy is its use as a drug. We should be careful to separate clearly these two uses. There are undoubtedly those who function better when taking small amounts

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of thyroid as a stimulant to activity. I cannot, however, escape the impression that the thyroid hormone is used far too frequently for this purpose and that a more careful consideration of the factors underlying the fatigue for which it is given would reward both the physician and the patient with a more fundamental solution of the problem.

When one is dealing with the overactivity of the thyroid gland which occurs in Graves' disease, iodine is of course the most valuable therapeutic agent whatever mode of therapy, conservative or surgical, is chosen. Here again relatively small amounts of iodine (say 15 to 30 mg. a day), appear to be adequate, although much larger amounts are usually given and with apparent safety. It is not my impression that, when small amounts of iodine fail to bring about the desired therapeutic effects, anything is ever gained by increasing greatly the amount of iodine administered.

In the treatment of the diseases of the adrenal cortex, of which Addison's disease alone is susceptible of endocrine therapy, two therapeutic agents are available. The first and cheapest of these is sodium chloride. In amounts of from 10 to 20 Gm. a day, best by mouth when tolerated, parenterally if necessary, sodium chloride is often able to bring about considerable relief from the symptoms of Addison's disease. In some cases of a milder sort it alone may suffice. In more severe cases the preparations of the adrenal cortical hormone must be used in addition. There are available several such preparations, some more potent than others. A serious deterrent to their use is their costliness. This problem may be solved by the synthetic preparation of effective hormone which gives promise of being shortly available. An oral preparation adsorbed on charcoal is also available, but there is little evidence that it contains, in the amounts which can be given at present, enough of the hormone to serve for complete replacement in Addison's disease. It is not unlikely, however, that the hormone will eventually be given orally, since there is good evidence that it is effective by that route in animals.

Parathyroid insufficiencies can be dealt with very effectively by well standardized and commercially available extracts of the parathyroid gland. Treatment with this extract, the chemical constitution of which is still unknown, should be supplemented by the vitamins influencing calcium absorption and utilization, such as vitamin D, and by dietary measures to increase calcium intake and absorption. Remember that most of the cases of parathyroid insufficiency in adults occurring either spontaneously or after thyroidectomy can be effectively controlled without the use of parathyroid extract simply by means of a high calcium intake and vitamin therapy.

When we turn to the pituitary gland we find available the pituitary hormone pitressin, from the posterior lobe, the use of which in diabetes insipidus is extremely effective in bringing about relief from the marked diuresis. Pitressin is effective not only parenterally but also intranasally.

The state of the hormones of the anterior lobe of the pituitary is as yet still quite unsatisfactory. A variety of fractions, all with supposedly specific functions, have been prepared. Their chemical nature is quite uncertain and their therapeutic uses except in a few conditions which I shall discuss briefly are still largely dependent on animal rather than clinical investigation.

There is as yet little evidence for the gonadotropic activity of such hormones in women. In males they are useful to assist in the descent of the testis in cryptorchidism if the failure of descent is not due to anatomic defects. They are also of value in hypogonadism, in which they are capable of increasing the growth of the testis and secondarily of the penis. These gonadotropic principles of the anterior pituitary are, however, no more effective in these two conditions than the pregnancy urine extracts or the placental extracts, which apparently contain a similar principle or principles. These preparations are usually standardized in rat units. In cases of undescended testis it is customary to give from 200 to 500 rat units subcutaneously three times a week. It is generally agreed that a six months trial of such therapy should be given before resorting to surgery. It may well be that some of the cases that failed to respond with these customary doses may respond to higher doses of a thousand rat units three times a week or more. Avoid excessive gonadal development in youngsters, since such sexual precocity may bring on new problems.

In the impaired development of the gonads of the eunuchoid type it is generally necessary to employ large amounts of the hormone. As much as from 1,000 to 3,000 rat units three times a week may be necessary. Because of the protein content of these preparations, tolerance to these higher doses should be brought about slowly; otherwise unpleasant symptoms, such as local pain, general malaise and fever, may result. Gonadotropic hormones extracted from mare serum give promise of effectiveness, but not enough work has been done as yet to say more than this for the present.

The male hormone is now available in crystalline form as testosterone propionate. Two reliable preparations of this hormone are commercially available in 5, 10 and 25 mg. amounts. The most definite indication for their use is the failure of sexual function which occurs after surgical castration. This is, of course, replacement therapy. Sexual function can be restored in such cases with the administration intramuscularly of 25 mg. three times a week and in some cases 10 mg. three times a week. The effects are obtained only as long as treatment is continued. This hormone can also be used to assist in the development of the external genitalia in male gonadal insufficiency. It also brings about increased sexual function in these cases. But it must be recognized that it is preferable to rely more on the gonadotropic hormones, which can induce testicular growth, so that the patient may then elaborate his own hormone. The two types of hormones may be used in conjunction with benefit in this condition.

Whether or not the male hormone will be of benefit in that rather vague state in the male which corresponds to the female menopause is a matter for further study. I have had no success in treating cases of psychic impotence. Strangely enough, the male hormone promises to be of some use in women, for there is evidence that it is effective in controlling menorrhagia.

When we turn to the female sex hormones we find a much more satisfactory situation. There are three naturally occurring and commercially available estrogenic hormones. These are the ketohydroxy, the dihydroxy and the trihydroxy estrin. Of these I have found only the ketohydroxy and the dihydroxy estrins therapeutically effective. These estrogenic hormones,

like the thyroid hormone, are effective by mouth as well as when given intramuscularly. The intramuscular route is however the more efficient. The amounts necessary for complete replacement in the menopause vary from about 1,000 rat units three times a week to as much as 5,000 rat units daily. From this great difference from patient to patient it is apparent that each patient must be considered as an individual therapeutic problem from the aspect of dosage. I might suggest as an average dose 2,000 rat units three times a week. There are various methods of gaging the completeness of replacement therapy. That employed in this clinic is the development of a follicular vaginal smear. It is our practice to maintain replacement therapy for a period of from four to six weeks and then stop. Treatment is resumed when symptoms reappear. Patients should be warned about the possibility of pseudomenstrual bleeding on stopping treatment and reassured as to its significance. When these hormones are given by mouth, approximately twenty times the amount given intramuscularly are needed to produce an equivalent effect. In comparing the various commercial preparations as to effectiveness we have found that the rat units offer a more reliable index than the international units indicated on the labels. The estrogenic hormones are also useful in bringing about the development of secondary sex characters in states of primary amenorrhea. In such cases our procedure is to give enough hormone over the course of two weeks in each month to produce a follicular smear. This is usually followed by a pseudomenstruation and in time by the development of a typical feminine conformation.

There remains one other female sex hormone to be discussed, the hormone of the corpus luteum, which is commercially available as a synthetic preparation. Unfortunately its clinical use has not been extensive enough for us to know very much about what it may do. There is good reason to feel, from studies which have shown its abnormally low production in habitual abortion, that it may well be useful in maintaining pregnancy in such conditions. Its scarcity and costliness have usually resulted in its use in much too small amounts to be effective. To judge from the level of excretion, it is hardly likely that we can anticipate proper replacement with this hormone in amounts less than 10 mg. a day.

I hope I have not sounded too pessimistic a note regarding many of the newer glandular preparations. I feel that extraordinarily rapid strides have been made during the past few years.

ARSENICAL AND BISMUTH PREPARATIONS

DR. WALSH MCDERMOTT: It takes so long for anything to happen to anybody with syphilis that the exact evaluation of any drug is a thing that must not be made too quickly. Arsphenamine has been out for only twenty-eight years and we still don't know all the things that it can do. In the clinic we use only six drugs: three trivalent arsenicals, one pentavalent arsenical, one heavy metal, potassium iodide. The three trivalent ones are arsphenamine, neoarsphenamine and mapharsen; mapharsen being used only extremely rarely in certain special cases. We believe arsphenamine to be the drug of choice in the treatment of early and latent syphilis. We feel that neoarsphenamine should not be used unless there is a definite indication for it. We use neoarsphenamine only in people who either have cardiovascular syphilis or have had some reaction to arsphenamine. Before arsphenamine is given it must be neutralized. We give it by the gravity method, and that is cumbersome in private practice; in fact, that is what has limited its use. However, recently one company has put out a preparation of arsphenamine and gives along with it the exact amount of sodium hydroxide in individual ampules so that it is almost as easy to administer arsphenamine in private practice as it is to use neoarsphenamine, and the comparison between the two drugs from the point of view of therapy shows a high score on the side of arsphenamine. Mapharsen we use only in some patients who cannot take one of the other two drugs. We feel that mapharsen, which is an arsenoxide derivative, presumably the active principle of arsphenamine, may prove to be a very valuable drug. We know it will kill spirochetes. We do not know what it will do to the central nervous system or to the cardiac system, and it will take years of patient investigation before we shall be able to discover this. It does cause much fewer minor reactions and can be used for people who have trouble with the other drugs.

The reactions are important matters in the antisyphilitic drugs. Between arsphenamine and neoarsphenamine there is practically no difference as far as the major reactions go, which we consider as jaundice, skin reactions and blood dyscrasias. The minor reactions, namely gastrointestinal upsets, headache and nitritoid reactions, are more common with arsphenamine. When you are administering these drugs it is very important to be sure that the patient has not eaten before taking it and does not eat for three hours thereafter. To some patients who have had skin eruptions we have been able to give mapharsen although they have very definite sensitivity to the other arsenicals, but that is not the case in all patients by any means. Also in people with jaundice after recovery we are able to go ahead with an arsenical drug, but there you have to consider each case separately. Tryparsamide is a pentavalent arsenical which has value only in disease of the central nervous system. It can be used in any case of syphilis of the central nervous system in which there is a lesion that would constitute a contraindication to one of the trivalent arsenicals. By that I mean it can be used in cases of combined central nervous and cardiovascular syphilis in full doses for the central nervous system syphilis without in any way damaging the status of the cardiovascular syphilis. When you are giving tryparsamide you must be sure to give some treatment with the other antisyphilitic drugs to prevent progression of syphilitic lesions aside from the central nervous system disease. The dangers to the eye in tryparsamide treatment are grave, so that its administration in private practice is very hard unless you have a patient who can be seen in an eye clinic or by an eye specialist any time you wish.

We use bismuth compounds in place of mercury. There are fewer reactions after them locally, in the kidney, and in the mouth. We have those reactions from bismuth compounds but they are not so frequent or so pronounced as after mercury. Furthermore, all the available evidence seems to show that bismuth compounds are more effective therapeutically than mercury. We use an insoluble preparation of bismuth, the insoluble suspension of bismuth subsalicylate in oil. The reason we believe in an insoluble preparation is that

we wish to create a certain steady low level of bismuth in the blood, and it is cheapest. It is cheaper for the patient and cheaper for us. The soluble bismuth compounds have to be given two or three times a week, and you get a fluctuating level of bismuth in the blood. The minor reactions are the things that are more common. We classify them euphemistically as minor, but they are not minor to the patient. Nausea and vomiting may be minor to us, but to the patient on a sixty-eighth street bus it is major and so you have to be careful about such things; but you can by changing the dosage and sometimes the drug do a great deal. The dose we use of arsphenamine is 0.4 Gm. in a man and 0.3 Gm. in a woman; of neoarsphenamine it is 0.6 Gm. in a man and 0.45 Gm. in a woman; of mapharsen it is much less, 60 mg. in a man. The tryparsamide dosage is way off from the others, being 3 Gm. for a normal dose.

We have read in the papers recently about the accident resulting from improper neutralization and that is something those of us who handle these drugs wake up in the night worrying about. We take the utmost precautions here, keeping the two drugs in different parts of the clinic, but even so we keep in mind the necessity of checking the procedure at every point.

LIVER AND IRON PREPARATIONS

DR. PAUL REZNIKOFF: If a patient needs liver we give him liver, and if a patient needs iron we give him iron, not a mixture of the two. However, it is not quite as simple as that. Most patients can take iron in almost any form, either reduced iron, ferric and ammonium citrate, or ferrous sulfate, but we have been using ferrous sulfate because it is cheaper, it can be given in effective dosage without gastrointestinal disturbance in most patients, and actually it is administered in smaller doses because it is probably more easily absorbed. The ordinary type of ferrous sulfate we use here comes in tablets. Each of these tablets contains about 60 mg. of iron. Originally it was thought it was necessary to give to an iron-deficient patient 1 Gm. of iron a day. I think that is more than is necessary. We think now an adult patient with iron deficiency, anemia, can get along perfectly well with 0.5 Gm. a day. That would mean about nine of these tablets or three tablets three times a day; and because iron may upset the gastrointestinal tract we give it after meals.

There is another type of ferrous sulfate which is even more easily tolerated, and that is the elixir. A dose of 4 cc. contains 0.12 Gm. of ferrous sulfate and you must remember that ferrous sulfate is only one-third iron. The other types of iron are effective but have to be given in large amounts as a rule. Iron and ammonium citrate has to be given in daily doses of about 6 Gm. and reduced iron of about 1 to 3 Gm. to have a comparable effect. There are about 500 iron products that have been on the market, and I don't think it makes very much difference which one is used. We have in this hospital experimented with the ferrous gluconate. Our original idea was to see if we could get a parenteral type, but it is not practical to give iron parenterally because iron is a substance that has to be given daily for a long period, at least a month in most cases, and after patients have been injected daily for a month, and it does not make much difference how much care is taken in the process, they will have a great many marks which make it unpleasant. Therefore I think we might say that today we use ferrous sulfate in some type or other, three doses daily after meals, so that the adult patient is receiving a total of at least 0.5 Gm. of iron as iron a day. One way of diminishing gastrointestinal disturbances with iron is to start with a small dose and increase daily to approach an optimum.

Liver extracts have recently been standardized on the basis of a unit system. Those working with parenteral liver extract—the most effective way to treat a patient—felt the need of a dosage in units as in the case of insulin. They spent a long time trying to develop a unit. They now have a unit, which is defined as the amount of liver extract daily which in at least three patients with pernicious anemia under standard conditions will produce a standard reticulocyte response. Patients differ and the unitage is made to depend on the particular patients that have been studied. Since the strength of the unit is variable, we must give very large doses and use the effects in our patients as our guide. Therefore our policy is to do this: A patient with a relapse is given a large dose of liver extract, from 15 to 30 units a day for four consecutive days. Then the patient continues to receive this dose two or three times a week, that is, after the reticulocytes have returned to normal and the red cell count has begun to rise. By the method of trial and error we determine the maintenance dose which will keep the patient at a normal red blood cell count, 4.5 million for women and 5 million for men.

Wholesale Druggists' Prices, 1938

Proprietary	(per Ounce)	Nonproprietary	((per Ounce)
Phenacetin	$0.62	Acetophenetiden	$0.16
Aspirin Bayer	0.75	Acetylsalicylic acid	0.13
Veronal	3.00	Barbital	0.56
Atophan	2.75	Cinchophen	0.35
Duotal	1.10	Guaiacol carbonate	0.30
Urotropin	0.25	Methenamine	0.15
Tolysin	2.00	Neocinchophen	1.04
Luminal	6.90	Phenobarbital	0.57
Trional	1.90	Sulfonethylmethane	0.70
Sulfonal	1.70	Sulfonmethane	0.55
Diuretin	1.85	Theobromine with sodium salicylate	0.25
Aristol	1.80	Thymol iodide	0.45

One other thing which I have time to call to your attention is this: While it is more convenient to give fewer cubic centimeters per dose, liver extract loses potency in the process of refining. For example, the 10 cc. product we used to have at the New York Hospital, derived from 50 Gm. of fresh liver, was as potent as the concentrated 3 cc. or 1 cc. derived from 100 Gm. However, to insure adequate dosage we give our patients more than the estimated minimum requirement, since we know of no deleterious effects of very large doses and since the excess potent fraction is not destroyed or excreted but is stored.

DR. GOLD: Mr. Clarke who is head of the hospital pharmacy has had to grapple with many practical problems in the selection of drugs, and he will tell us of some of his experiences in this connection.

COST OF DRUGS

MR. DONALD A. CLARKE: The two considerations which play an important part in our selection of preparations in the hospital pharmacy are price and quality. I have assembled a few of the figures on costs which help to give some idea as to where these matters stand with respect to some of the more common medicines that are prescribed.

In this table are listed the comparative costs of some of the proprietary and nonproprietary preparations of the same drug. The prices were obtained from one of the outstanding wholesale drug supply houses in New York City. Please note how much we pay for a protective name. For example, veronal costs five times as much as the same drug under the U. S. P. official name barbital; luminal, twelve times as much as the same drug under the U. S. P. official name phenobarbital. Among other barbituric acid compounds similar differences in price are encountered. Interesting relations may be seen by using a dose of 0.1 Gm. of soluble phenobarbital as the basis for comparison. This is the U. S. P. preparation and this dose costs the patient 0.2 cent. A similar dose of amytal sodium costs more than ten times as much, the same for ortal sodium, of alurate sodium more than twelve times as much, of pentobarbital sodium fifteen times as much and of seconal about twenty times as much. I believe that these doses are fairly comparable. There are differences in the actions of these compounds, but there may well be numerous instances in which the very costly preparations are prescribed when all the therapeutic effects that are necessary can be obtained from the much cheaper phenobarbital.

Theobromine with sodium salicylate is a U. S. P. preparation which is relatively inexpensive, but if you fail to write the official name and instead order it under the protected name, diuretin, this material will cost your patient more than seven times as much. These are matters to which attention has been called repeatedly. A recent publication called "The Costs of Medicine" by Rorem and Fischelis, under the auspices of the Committee on the Costs of Medical Care, gives an extensive discussion of this subject.

The digitalis preparations also provide useful data with regard to cost. The patient pays 0.6 cent for 1 cat unit (1 cc.) of the U. S. P. tincture of digitalis but less than one-half as much (0.3 cent) for a similar dose (1 cat unit) of a good standardized digitalis leaf in tablets. Compare the latter with the proprietary preparation digitan (Merck), digifoline (Ciba) and digalen (Hoffman-La Roche) in ampules. These cost, for the same amount of the drug, namely 1 cat unit, fifty, fifty and thirty times respectively as much as the digitalis leaf.

Dr. Eggleston referred to morphine and its substitutes and stated that the substitutes appear to afford no special advantages over morphine itself. In the light of this, the difference in the cost of morphine and some of its substitutes becomes more important. A dose of morphine for hypodermic injection in the form of an ampule of pantopon costs about ten times as much as a similar dose of morphine sulfate, and in the form of an oral tablet it costs about six times as much as an oral tablet of morphine sulfate. A hypodermic dose of dilaudid (1/16 grain tablet) also costs about six times as much as a therapeutically equivalent dose of morphine (one-fourth grain tablet).

Among liver preparations for the treatment of pernicious anemia, wide differences exist in the cost of comparable doses. For example, a daily dose of one of the concentrated parenteral preparations costs only 4 cents, whereas a daily dose of one of the preparations for oral administration costs as much as 40 cents. However, the cost to the patient may be less in the latter case than in the former, because in the one instance an injection is necessary and this may require the daily services of a physician, whereas in the case of the oral material such frequent attention of the physician is not necessary.

In the field of the glandular products the point that appears necessary to emphasize is the very high cost of adequate doses of potent materials. Several examples of approximate costs of treatment may be cited. The cost of adrenal cortical substance is prohibitive. One of the patients in the clinic who requires 18 cc. daily for replacement in Addison's disease is receiving a dose of a preparation costing about $8 a day. The gonadotropic hormone preparations are also extremely expensive. The preparation known as follutein costs about $12 for 5,000 rat units, and a course of treatment often calls for 500 units three times a week, as Dr. Shorr has indicated. Antuitrin-S is even more expensive, $4 per thousand rat units. The male sex hormone, the crystalline testosterone propionate, costs $12 for three ampules of 25 mg. each and, as you have heard, as much as 25 mg. three times a week is sometimes necessary in replacement therapy. The female sex hormones amniotin and theelin cost about $1 per average dose of 2,000 rat units, or about $3 a week in a course of treatment which may run over a period of several weeks. The synthetic preparation of the corpus luteum which is now available costs $7.50 for 10 mg. You can readily calculate what the total cost to the patient will be if, as Dr. Shorr suggested, a daily dose of 10 mg. is necessary for replacement over a period of months of pregnancy.

DR. GOLD: I am afraid we have run over the hour, and unfortunately have no time for questions. If somebody feels an irrepressible urge to put a question, however, it may be possible to have it answered.

STUDENT: How can a physician practicing outside secure the digitalis put out by the New York Heart Association?

DR. EGGLESTON: He cannot. Those preparations are limited to use by clinics which are members of the Heart Association. However, there are preparations manufactured on the same general principles which have proved trustworthy over periods of years.

STUDENT: Would you tell us what preparations those are?

DR. EGGLESTON: There are several. One is the preparation made by Lederle, a powdered digitalis leaf which has stood the test of experience over a period of years and is alleged to be made according to the requirements of the New York Heart Association. Another similar preparation is made by Schieffelin & Co.

STUDENT: Do you use the same dosage with these?

DR. EGGLESTON: Yes, the same dosage.

DR. WALTER MODELL: What about the relative cost of bulk ether as compared with that of small cans of ether?

DR. MCKEEN CATTELL: Certainly you can reduce the cost of ether for anesthesia to about one fourth by using bulk ether in 27 pound drums instead of the quarter pound cans. It used to be thought that ether deteriorates quickly, but the work which has been going on in our laboratory shows that ether does not deteriorate even during several weeks after the metal container has been opened repeatedly. There are several large hospitals which are now using bulk ether for anesthesia entirely satisfactorily.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

EPINEPHRINE (See New and Nonofficial Remedies, 1938, p. 230).

EPINEPHRINE, U. S. P.-UPJOHN.—Marketed in vials containing 0.065 Gm. (1 grain).

Manufactured by the Upjohn Company, Kalamazoo, Mich.

Solution Epinephrine 1:1000-Upjohn: Each cubic centimeter contains epinephrine 1.0 mg., sodium chloride 7.0 mg., sulfur dioxide (as sulfurous acid) not more than 0.6 mg., chlorobutanol not more than 5.0 mg., dissolved in distilled water saturated with carbon dioxide. Marketed in packages of 1 cc. ampules and 30 cc. vials.

SCOPOLAMINE HYDROBROMIDE (See New and Nonofficial Remedies, 1938, p. 377).

SCOPOLAMINE HYDROBROMIDE-MERCK.—A brand of scopolamine hydrobromide-U. S. P.

Manufactured by Merck & Co., Inc., Rahway, N. J.

Scopolamine Hydrobromide Crystals-Merck: Marketed in vials of 1, 5 and 15 grains.

Scopolamine Hydrobromide Powder-Merck: Marketed in vials of 1, 5 and 15 grains.

CAFFEINE WITH SODIUM BENZOATE (See New and Nonofficial Remedies, 1938, p. 156).

Ampuls Caffeine with Sodium Benzoate, 2 cc.: An Aqueous solution containing in each 2 cc. caffeine with sodium benzoate-U. S. P. 0.5 Gm. (7½ grains).

Prepared by The Maltbie Chemical Co., Newark, N. J.

THIAMIN CHLORIDE (See THE JOURNAL, July 16, 1938, and the Revised Supplement to New and Nonofficial Remedies, 1938, p. 23).

Thiamin Chloride-Abbott.—A brand of thiamin chloride-N. N. R.

Manufactured by Abbott Laboratories, North Chicago. No U. S. patent or trademark.

Tablets Thiamin Chloride-Abbott, 0.33 mg.: Each tablet contains 100 international units of thiamin chloride.

Tablets Thiamin Chloride-Abbott, 1.0 mg.: Each tablet contains 300 international units of thiamin chloride.

Tablets Thiamin Chloride-Abbott, 3.3 mg.: Each tablet contains 1,000 international units of thiamin chloride.

Ampoules Solution Thiamin Chloride-Abbott, 6.66 mg.: Each ampule contains 2,000 international units of thiamin chloride.

Ampoules Solution Thiamin Chloride 1.0 mg., 1 cc.: Each ampule contains 300 international units of thiamin chloride.

Ampoules Solution Thiamin Chloride 10.0 mg., 1 cc.: Each ampule contains 3,000 international units of thiamin chloride.

SOLUTION OF FORMALDEHYDE (See New and Nonofficial Remedies, 1938, p. 248).

SOLUTION OF FORMALDEHYDE-MERCK.—A brand of solution of formaldehyde-U. S. P.

Manufactured by Merck & Co., Inc., Rahway, N. J.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1938, p. 142).

Bismuth Subsalicylate in Oil Suspension: A suspension of bismuth subsalicylate in peanut oil, each cubic centimeter containing 2 grains (0.13 Gm.) of bismuth subsalicylate, U. S. P. (equivalent to 75 mg. of Bi metal) and 0.03 Gm. (3 per cent) of chlorobutanol. Marketed in bottles containing 30 cc., 60 cc. and 100 cc.

Prepared by the Diarsenol Company, Inc., Buffalo, N. Y. No U. S. patent or trademark.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1938, p. 74).

PROCAINE HYDROCHLORIDE-THE UPJOHN CO.—A brand of procaine hydrochloride-U. S. P.

Manufactured by The Upjohn Co., Kalamazoo, Mich. No U. S. patent or trademark.

Ampoule Solution Procaine Hyrochloride ½% with Epinephrine, 5 cc.: Each cubic centimeter contains procaine hydrochloride, U. S. P. 0.005 Gm.; epinephrine, 0.05 mg.; sodium bisulfite, 1.6 mg.; benzoic acid, 0.06 mg.; sodium chloride, 8.5 mg.; normal hydrochloric acid, 0.0007 cc.; dissolved in distilled water and saturated wth carbon dioxide.

Ampoule Solution Procaine Hydrochloride 2% with Epinephrine, 1 cc.: Each cubic centimeter contains procaine hydrochloride, U. S. P., 0.02 Gm.; epinephrine, 0.05 mg.; sodium bisulfite, 2.6 mg.; benzoic acid, 0.3 mg.; sodium chloride, 8.3 mg.; normal hydrochloric acid, 0.0016 cc.; dissolved in distilled water and saturated with carbon dioxide.

Ampoule Solution Procaine Hydrochloride 2% with Epinephrine, 3 cc.: Each cubic centimeter contains procaine hydrochloride, U. S. P., 0.02 Gm.; epinephrine 0.05 mg.; sodium bisulfite, 2.6 mg.; benzoic acid, 0.3 mg.; sodium chloride, 8.3 mg.; normal hydrochloric acid, 0.0016 cc.; dissolved in distilled water and saturated with carbon dioxide.

Solution Procaine Hydrochloride 1% with Epinephrine, 30 cc. Vials: Each cubic centimeter contains procaine hydrochloride, U. S. P., 0.01 Gm.; epinephrine, 0.02 mg.; sodium bisulfite, 2.1 mg.; benzoic acid, 0.2 mg.; sodium chloride, 8.4 mg.; normal hydrochloric acid, 0.00125 cc.; chlorobutanol, not more than 5 mg.; dissolved in distilled water and saturated with carbon dioxide.

Solution Procaine Hydrochloride 2% with Epinephrine, 30 cc. Vials: Each cubic centimeter contains procaine hydrochloride, U. S. P., 0.02 Gm.; epinephrine, 0.05 mg.; sodium bisulfite, 2.6 mg.; benzoic acid, 0.3 mg.; sodium chloride, 8.3 mg.; normal hydrochloric acid, 0.0016 cc.; chlorobutanol, not more than 5 mg.; dissolved in distilled water and saturated with carbon dioxide.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

CELLU BRAND RED CHERRY JUICE

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Description.—Canned red cherry juice packed without added sugar.

Manufacture.—Selected ripe red cherries are picked, washed, chilled by immersion in cold water and macerated. The semi-liquid material is run through a hydraulic press. The juice is then pasteurized, cooled, filled by the so-called vacuum process into enamel-lined cans, sealed under vacuum and processed.

Analysis (submitted by distributor).—Moisture 87.7%, total solids 12.3%, ash 0.3%, fat (ether extract) 0.6%, protein (N × 6.25) 0.5%, crude fiber none, carbohydrates (by difference) 10.9%, invert sugar 9.0%, sucrose 0.1%.

Calories.—0.5 per gram; 14 per ounce.

MRS. PALEY'S BABY FOOD—STRAINED ASPARAGUS

Manufacturer.—Paley Sachs Food Company, Houston, Texas.

Description.—Canned, sieved asparagus, slightly seasoned with salt.

Manufacture.—Selected canned white asparagus is sieved, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 93.3%, total solids 6.7%, ash 0.8%, fat (ether extract) 0.4%, protein (N × 6.25) 2.2%, reducing sugars as dextrose 1.2%, sucrose 0.4%, crude fiber 0.7%, total carbohydrates other than crude fiber (by difference) 2.6%, calcium (Ca) 0.015%, phosphorus (P) 0.037%, iron (Fe) 0.0035%.

Calories.—0.2 per gram; 6 per ounce.

CELLU BRAND APRICOT JUICE

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Description.—Canned apricot juice packed without added sugar.

Manufacture.—Selected, tree-ripened apricots are sprayed with water, sorted, pitted, preheated, and pressed through coarse mesh cloth. The juice, which contains some of the insoluble solids of the pulp, is filled into cans and processed without preheating in special vacuum sealing machines. No toxic spray materials are used on the growing fruit.

Analysis (submitted by distributor).—Moisture 88.4%, total solids 11.6%, ash 0.5%, fat (ether extract) 0.4%, protein (N × 6.25) 0.5%, crude fiber 0.04%, carbohydrates other than crude fiber (by difference) 10.2%, invert sugar 4.7%, sucrose 4.2%.

Calories.—0.5 per gram; 14 per ounce.

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SATURDAY, MARCH 25, 1939

DIAGNOSIS OF GONORRHEA BY CULTURE

Ordinarily the diagnosis of acute gonorrhea presents few great difficulties. In the chronic forms, however, and when the infection is located extragenitally, prompt and accurate diagnosis is sometimes not so easy. Early and accurate identification is important not only from the point of view of treatment but also in the control of the disease.

One of the most satisfactory additions to diagnostic methods is the use of culture mediums in the determination of the presence of gonococci in chronic or atypical lesions. Recent experience with this procedure seems to indicate that the best method of culturing the gonococcus so far devised is by the use of a chocolate agar incubated in air containing 8 per cent carbon dioxide as described by McLeod and his co-workers [1] with or without the help of the oxydase reaction or slight modifications of this technic. Using a variation of McLeod's procedure with a chocolate agar made from a Douglas agar base and the incubation of duplicate cultures at 34 and 37 C. in 10 per cent carbon dioxide, Carpenter and his colleagues [2] examined the cervix and urethra of 245 adult female patients, making also smears in each case. From both methods eighty, or 32.7 per cent, proved to be positive. In all, 843 cultures with smears were submitted to the laboratory, of which 223 were positive by either the cultural or the smear method. Of the 223 bacteriologic examinations reported as positive the cultural method revealed gonococci in 205, or 91.9 per cent, of the specimens, while the organism was found in smears in only 107, or 48 per cent. In eighteen instances positive smears were obtained when cultures were negative. The use of the two methods simultaneously, therefore, increases the positive diagnoses enormously over the use of the smear method alone, and not inconsiderably over the cultural method alone. These investigators concluded, therefore, that both methods should always be used. Stout and Todd [3] followed the McLeod procedure in the examination of ninety-three cultures from various sources. They obtained twenty-two positive cultures, or 23.6 per cent. In the analysis of their results they found the cultural method superior to the smear in twelve, or 15.6 per cent, but failed to obtain growth in thirteen cases in which there were gram-negative diplococci present in the smears. Jacobsen and her co-workers [4] attempted the isolation of the gonococcus in 100 cases of chronic female gonorrhea. Plated culture mediums were directly streaked from the urethra and the endocervix with sterile cotton applicators and within two hours were placed in an incubator kept between 35 and 37.5 C. Most of the cultures were incubated in lots of from six to eight in air-tight Novy jars in which from 8 to 10 per cent carbon dioxide was produced by mixing sulfuric acid with a solution of sodium bicarbonate. The routine mediums used were plain blood agar, chocolate agar, amniotic fluid agar, testicular agar, chocolate agar with a Douglas agar base, and ascitic fluid agar with a Douglas agar base. They also concluded that Douglas agar with heated blood is the medium of choice and that the presence of carbon dioxide in the incubator atmosphere is more important than the presence of moisture for the primary isolation of gonococci by culture. Their analysis also indicated that cultures are superior to direct smears. In addition they felt that the gonococcus fixation tests were superior to either cultures or direct smears. Reitzel and Kohl [5] have also been successful in culturing gonococci from various lesions either on hormone brain broth or on brain heart infusion with the addition of ascitic fluid. Similar successful reports have been appearing with increasing frequency in the foreign literature.

Although there is nothing new in the attempt to culture gonococci from the tissues, recent methods have improved the possibilities. At present the necessary technic and equipment restrict the application of cultural methods of diagnosis, but still further simplification may well increase its applicability. Finally it must be emphasized that the cultural examination for gonococci is not necessary when such organisms can be readily identified by smear but that in the more difficult cases both smear and culture and possibly complement fixation tests enormously increase the number of cases of gonococcic infections properly identified.

1. McLeod, J. W.; Coates, J. C.; Happold, F. C.; Priestley, D. P., and Wheatley, Bertha: Cultivation of the Gonococcus as a Method in the Diagnosis of Gonorrhea, with Special Reference to the Oxydase Reaction and to the Value of Air Reinforced in Its Carbon Dioxide Content, J. Path. & Bact. **39**: 221 (July) 1934.

2. Carpenter, C. M.; Leahy, Alice D., and Wilson, K. M.: A Comparison of the Results of the Smear and Cultural Methods for the Diagnosis of Gonococcal Infections in Adult Females, Am. J. Syph., Gonor. & Ven. Dis. **22**: 55 (Jan.) 1938.

3. Stout, B. F., and Todd, D. A.: Observations and Notes on the Culture of Gonococcus, Texas State J. Med. **34**: 211 (July) 1938.

4. Jacobsen, Frances; Mason, H. C., and Arnold, Lloyd: Laboratory Diagnosis in Chronic Gonorrhea of the Female, J. Lab. & Clin. Med. **23**: 729 (April) 1938.

5. Reitzel, R. J., and Kohl, Cordula: The Identification of Gonococci in Complications of Gonorrhea, J. A. M. A. **110**: 1095 (April 2) 1938.

DERMATOMYOSITIS

Dermatomyositis is rare in appearance and mysterious in origin. So closely does it resemble other conditions in some respects that doubt has been expressed that it is an entity. Dowling and Freudenthal,[1] after citing three cases, summarize the clinical picture of dermatomyositis. Occasional prodromes appear as patches of erythema or Raynaud-like symptoms, during which the diagnosis is impossible. Usually the condition begins with erythema and swelling of the face and eyelids, sometimes extending to other regions. This phase may last for months but is succeeded by more persistent cutaneous changes resembling lupus erythematosus and spreading from the face to the neck, thorax, shoulders, arms and elsewhere. In severe cases early and extensive muscular weakness occurs and usually acute swelling and pain. An intermittent fever is usually, although not always, found at this stage. Histologically the epidermis is thinned with diminished or absent rete pegs, sclerotic connective tissue and diminished elastic fibers in the sclerotic areas.

In a case of dermatomyositis recently reported by Hendry and Anderson,[2] the symptoms began with a roughness or chapping of the hands followed by itching in the back of the neck and flexor aspects of the elbows and knees and swelling of the hands and feet. Later there was severe weakness, stiffness of the shoulders and elbows and difficulty in swallowing, and the skin had a violet blue tint. The legs were weak but obvious wasting was not apparent. Microscopic examination of some muscle and skin removed by biopsy revealed the interstitial tissue of the muscle extensively infiltrated by mononuclear cells in relatively large foci, comprising a small portion of plasma cells. The adjacent muscle fibers were more or less atrophic. Changes in the skin and fat were characterized by a scanty round cell perivascular infiltration. In another case reported at the same time by Sheldon and his collaborators[3] weakness, edema and changes in the voice were again prominent symptoms. The general color of the patient was pale, but over the bridge of the nose, both eyelids and the upper parts of the cheeks was a swollen area covered with a bright red erythema. This patient died. Portions of voluntary muscle from various parts of the body showed an intense edema with some localized increase of fibrosis of the areolar tissues normally lying between the muscle bundles. Accompanying this edema was a degenerative process of the muscle fibers themselves, indicated by fragmentation and a hydropic type of degeneration of the muscle fibers. The process elsewhere in the body was described in short as a generalized reticulo-endotheliosis, although the changes in the muscles were apparently due to inflammation and degeneration, few endothelial cells being found. Sheldon and his colleagues therefore suggest that the basis of dermatomyositis is a reaction of the reticulo-endothelial system, usually local but occasionally generalized, and due to some cause as yet unknown.

In a case reported by Lane,[4] the close similarity between dermatomyositis and lupus erythematosus disseminatus is brought out. The clinical course in this case, however, differed from lupus in that the pain and tenderness were in the muscles and tendons rather than in the joints. Without exception the redness, edema, fever and leukopenia could easily have been mistaken for that of lupus erythematosus. Lane feels, furthermore, that these diseases may be closely related etiologically. Although satisfactory progress is being made in the understanding of the clinical manifestations and pathologic anatomy of dermatomyositis, the etiologic factors remain elusive.

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2. Hendry, A. W., and Anderson, T. E.: Dermatomyositis, Lancet **1**: 80 (Jan. 14) 1939.
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Current Comment

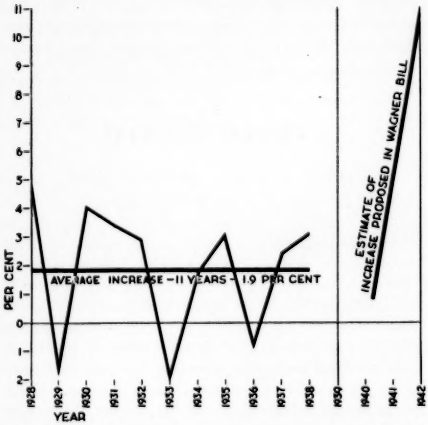
ORAL POLLEN PREPARATIONS

Early last year THE JOURNAL published a statement from the Chicago Society of Allergy in reference to oral pollen preparations placed on the market by some pharmaceutic houses. The Chicago allergists urged others to sound a note of warning not only because of the probable numerous disappointments which might occur following the use of oral pollen preparations but also because of the possible dangers inherent in any new and unproved method of treatment. A year previously THE JOURNAL, in Queries and Minor Notes, emphasized that self-administered therapy of this type is likely to lead to disappointments. Elsewhere in this issue appears a new communication from the Chicago Society of Allergy.[1] The society is to be commended for its stand against the exploitation of a product for oral administration in the treatment of hay fever which may be not only not beneficial but a decided economic loss to the patient. The difficulty of regulating dosage because of the difference in rate of absorption from the gastrointestinal tract alone is a serious objection to this mode of therapy. It will require considerable evidence to show by passive transfer work that pollen is absorbed in the doses intended. At present oral pollen preparations for the treatment of hay fever are apparently being promoted by Allergy Research Laboratories, Phoenix, Ariz., Pollen Laboratories, Phoenix, Ariz., Hollister-Stier Laboratories, Spokane, Wash., G. H. Sherman Company, Detroit and Eli Lilly and Company, Indianapolis. The Council on Pharmacy and Chemistry of the American Medical Association has accepted no pollen preparation proposed for oral administration.

1. Illinois News, page 1171.

THE WAGNER BILL AND GENERAL HOSPITALS

Section 1201 of the Wagner bill, S. 1620, authorizes the appropriation in successive years of eight, fifty and one hundred million dollars, respectively, for the construction and improvement of general hospitals. Under section 1203 (*a*) (1), financial participation by the states is required. Naturally the extent of this participation will vary from state to state. Assuming, however, that the contributions of the federal government will be on a fifty-fifty basis,[1] there will be available for the construction and improvement of government-owned general hospitals $16,000,000 in the fiscal year ending June 30, 1940, $100,000,000 in 1941 and $200,000,000 in 1942. Taking $4,000 as the average cost per bed of general hospitals,[2] this bill would make



Average rate of increase in number of beds in general hospitals and estimate of increase proposed in Wagner bill.

provision for the addition of 4,000 general hospital beds in 1940, 25,000 general hospital beds in 1941 and 50,000 general hospital beds in 1942. These figures relate only to government-owned hospitals and do not include such enterprises, public or private, as may be undertaken without the stimulus of a federal subsidy. From the accompanying chart it will be seen that over the eleven year period 1928-1938 inclusive the average rate of increase in the number of beds in general hospitals was 1.9 per cent. The increases in number that are proposed in the Wagner bill amount to a total of 79,000 beds, 16.2 per cent, in three years, or an average rate of increase of 5.4 per cent. In 1938 the general hospitals of the country were filled to 68.9 per cent of their capacity; 31.1 per cent of the beds were unused. Wherein lies the justification of the proposal to multiply threefold the normal increase of hospital facilities?

1. National Health Conference, July 18, 19 and 20, 1938, p. 39.
2. National Health Conference.[1] The Interdepartmental Committee uses $3,500 as the average cost per general hospital bed.

DISTINGUISHED SERVICE MEDAL

The second medal to be awarded for distinguished service to scientific medicine will be presented at the opening general meeting at the St. Louis session on May 16. The recipient of this medal is chosen by a process of selection which insures choice of an outstanding physician and scientist. Any physician who wishes to nominate a candidate for the Distinguished Service Medal may send his nomination to the chairman of the committee, Dr. E. L. Henderson of Louisville, Ky. This committee sends five nominations to the Board of Trustees of the American Medical Association, which then selects three names from the five. The three names are presented to the House of Delegates at the opening of the meeting, which will on this occasion be Monday morning, May 15. The House of Delegates votes immediately and the recipient of the honor is presented with the medal on the following night. Last year the first medal was awarded to Dr. Rudolph Matas, distinguished surgeon of New Orleans. Other candidates nominated to the House of Delegates included Dr. Simon Flexner and Dr. Ludvig Hektoen. By this award the American Medical Association indicates its recognition of scientific advancement as one of the main functions of organized medicine. Fellows of the Association can cooperate by sending to the chairman of the committee the names of those whom they believe to be entitled to such an honor, together with a record of their services to science.

FLORIDA TELEPHONE DIRECTORIES

The users of Florida telephone directories published by the Southern Bell Telegraph and Telephone Company may now know whether a person listed therein as a doctor is a doctor of medicine, an osteopath, chiropractor or naturopath, or a practitioner of any other method of healing. In the alphabetical list in the directory, after each name of a doctor of medicine appears the suffix "Dr. Phys.," and a similarly identifying suffix after the name of each cult practitioner listed. The classified section in the directory is arranged similarly to differentiate between the practitioners of the different methods of healing authorized by law in Florida. This change in the method of listing practitioners in the telephone directories followed the enactment of a law that requires every practitioner of the healing art to place and keep in a conspicuous place at each entrance of his office or usual place of business words or abbreviations denoting the particular kind or branch of healing in which he is lawfully entitled to engage. This law was considered as having established as a mattter of public policy the desirability of public disclosure of the type of practice in which each practitioner engages. The telephone company, to further the public policy, and at the request of the medical profession of Florida, revised its methods of listing practitioners in its directories, a procedure it had theretofore hesitated to undertake. The Florida Medical Association with the cooperation of the telephone company has thus succeeded in eliminating a potential source of misinformation and danger for those who resort to telephone directories to ascertain the method of practice pursued by any practitioner.

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ORGANIZATION SECTION

CANADIAN EXPERIMENTS IN MEDICAL ECONOMICS

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TORONTO

For a period of two thousand years and more, medicine has been engaged in building its structure. Generation after generation has given to the world men of science, men of learning, men of courage, who have been willing to forget self, to sacrifice and to die if necessary in order that the ever accumulating knowledge of health and disease might more deeply penetrate the unknown, looking to the day when speculation regarding the ills of man would be replaced by complete understanding.

During this long period medicine has been on the march, sometimes marking time, sometimes standing easy, but in the main marching forward, never backward. There is none among us who will say that victory has been won on all fronts. On the contrary, we will readily admit that what has been accomplished is but a prelude to what lies before. Nevertheless, accomplishments there have been, and multitudes of people scattered throughout the world are living testimonials to scientific achievements in the field of endeavor of which the members of our profession are disciples.

As we contemplate what has taken place in the development of our scientific knowledge, we should also direct our attention to what has concomitantly taken place with regard to our place in the social universe.

There was a day not so long ago when our knowledge and our dispensation of it were neither called in question nor disputed. "The doctor says so" was all sufficient. The doctor's public confidently and complacently accepted his advice and followed his instructions. The doctor was satisfied to have it so. He gave no thought to the situation's ever being subject to change. Indeed, many doctors will neither admit nor recognize that changes are taking place in the public mind. Such doctors, however, are like the foolish virgins; their lamps are without oil. Good and true servants though they be, they are proceeding blindly and if left to flounder by themselves will be wrecked on the reefs of change which they can not or will not see.

What is it that has happened?

What is all this talk about change in the public mind?

Who are the busybody bunglers in our own ranks who continue to stir up trouble for the profession?

Why can we not carry on as our forefathers did and their forefathers before them?

Leave us alone and let us practice scientific medicine in our own way.

But, alas, we cannot stop our fellow men from thinking and speaking and acting, any more than we can turn back a raging prairie fire. Perhaps, if one may continue the analogy, we should plow some furrows and burn a few patches here and there, so that the prairie fire may be brought under control. Perhaps too the burned-over ground might bring forth results to satisfy all who dwell thereon. In any event we must deal with situations as we find them and not with academic discussions. The facts are before us.

Great masses of people of high and of low estate, and in increasing numbers, are thinking and saying that they know better than do the doctors how medicine should be practiced. So far as one knows they do not question the doctor's willingness to treat rich and poor alike, but they do question his ability to determine the modus operandi by which his professional skill shall be made available, particularly to that great middle class of the population commonly described as average and low wage earners. From all this turmoil there has emerged not a new science but a most lively and active interest in a branch of our profession which we describe as medical economics.

Medical economics has been defined as "the science that investigates the conditions and laws affecting the production, distribution, consumption and cost of the various types and kinds of medical services that promote and preserve the health of the people." If we accept this definition as one which broadly covers the subject, it will be seen that the medical profession has every right and indeed every obligation to investigate and define the conditions and laws which have to do with the various types of medical service to which the public is entitled, looking to the preservation of the health of the people at the optimum level.

Speaking for myself, I am not willing to admit for one moment that the medical profession as a body is incompetent to determine how best the public shall be served. On the contrary, it is my firm belief that, given the opportunity to act in a corporate manner, the medical profession is equal to any task which properly comes under its purview. I say advisedly that we are equal to the task, but I think that one should be just as emphatic in saying that we are equal only so far as we are willing to assume the task.

What is the task?

Briefly put, I think it is this: To provide adequate medical care for all the people at a price which is fair to all the people, including those who render the service. That is our task.

Is it? Well, if it is not our task it certainly belongs to somebody, because the public has a right to expect and demand medical services at a price within its competence to pay, and if we should prove ourselves unwilling or unable to organize on a basis to meet the public's proper demands we deserve to become enmeshed in plans not of our making or choosing. But, may I repeat, the members of the medical profession are capable of meeting the situation, and meet it we must and will.

If I interpret correctly the attitude of the American Medical Association, which represents a very large section of medical opinion in the United States, it has affirmed over and over again its willingness and indeed its anxiety to do all in its power to see to it that no citizen of the United States is deprived of medical care, no matter what his financial station may be. Organized medicine in Canada has taken a similar stand, and yet

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there are people both in the United States and in Canada who, for reasons best known to themselves, appear to get vicarious pleasure out of assailing the medical profession and questioning its sincerity. Evidence is not lacking that the medical profession has been subject to much buffeting in days which have gone, and we may expect to face many storms in the days that are to come. With proper perspective, however, we shall emerge into calm and peaceful waters, having full confidence in our ability to steer the ship to a secure haven.

Admitting, if I may, that there is an urge on the part of great masses of the public for some change to be brought about in medical practice, how best may we proceed to study the merits of the case, if merit there be? Accuracy is often born of trial and error. It is my view that we should accept all reasonable opportunities to demonstrate by trial, and possibly by errors too, well conceived plans whereby groups of persons may receive medical care; but the all-important consideration is this: The plans should be devised, worked out and put into operation with the fullest collaboration of the medical profession. Keeping this thought in mind, I wish to present the attitude of the Canadian Medical Association with regard to the subject under discussion and to outline as briefly and concisely as possible some Canadian experiments in the field of medical economics.

As is well known, many persons hold to the belief that state medicine or health insurance or some modification of one or both, governmentally applied, is the answer to the whole problem. We as a profession know equally well that this is far from the truth. We know that state medicine or health insurance, partially or wholly under government control, is in effect in forty countries. It has been my privilege to visit many of these countries and to study the vast majority of health insurance plans now in operation. I say with all confidence that I do not know of one scheme or plan now in effect in any country that I would wish to see introduced into Canada.

The Canadian Medical Association has not authorized an expression of opinion either in favor of or opposed to the institution of health insurance in Canada; as our legal friends would say, the matter is still *sub judice*. But, for use in the event that some plan is proposed from outside the profession, which in actual experience has already occurred, the association has set forth what it believes to be necessary guiding principles by which it can carefully scrutinize and measure all such plans as are advanced. May I now present these principles:

1. That, in the provinces where health insurance is established, it be administered under an independent health insurance commission and that there be close cooperation between this commission and the provincial department of public health with a view to making full use of preventive services.

2. That a general health insurance board and local insurance boards be appointed, representative of all interested, to advise the responsible administrative authority.

3. That the professional side of health insurance medical service be the responsibility of the organized medical profession through the appointment of a central medical services committee and local medical services committees, to consider and advise on all questions affecting the administration of the medical benefit.

4. That the question of the establishment of local areas for health insurance administration be left to the decision of the individual provinces.

5. That the whole province be served by adequate departments of public health, organized on the basis of provision of individual health supervision by the health insurance general practitioner.

6. That there be a health insurance fund and that regional medical officers to act as supervisors and referees be appointed, paid and controlled by the central board or commission.

7. That medical care for indigents be provided under the plan, the government to pay the premium of the indigents, who then receive medical care under exactly the same conditions as the insured person.

8. That the plan be compulsory for persons having an annual income below a level which on investigation by competent local authorities proves to be insufficient to meet the costs of adequate medical care.

9. That the dependents of insured persons be eligible for the medical benefit.

10. That there be offered, on a voluntary basis, to those with incomes above the health insurance level, hospital care insurance and that this be administered as part of the health insurance plan, such hospital care not to include medical service other than hospitalization.

11. That the only benefit under the plan be the medical benefit.

12. That the medical benefit be organized as follows:

(*a*) Every qualified licensed medical practitioner to be eligible to practice under the plan.

(*b*) The insured person to have freedom of choice of medical practitioner and vice versa.

(*c*) The medical service to be based on the making available to all of a general practitioner service for health supervision and the treatment of disease.

(*d*) Additional services to be secured ordinarily through the medical practitioner:

(1) (*a*) Specialist medical service.
(*b*) Consultant medical service.
(2) Visiting nurse service (in the home).
(3) Hospital care.
(4) Auxiliary services—usually in a hospital.
(5) Pharmaceutic service.

(*e*) Dental service, arranged directly with the dentist or on reference.

13. That the insurance fund receive contributions from the insured, the employer of the insured and the government.

14. That the medical practitioners of each province be remunerated according to the method or methods of payment which they select.

15. (*a*) That the schedule of fees in any health insurance scheme be the schedule of fees accepted by the organized profession in the province concerned.
(*b*) That all schedules of fees be under complete control of the organized medical profession in each province.

16. That the contract-salary service be limited to areas with a population insufficient to maintain a general practitioner in the area without additional support from the insurance fund.

17. That no economic barrier be imposed between doctor and patient.

18. That the volume of work demanded from and the remuneration to members of the various professions be such as to assure a standard of service equal to or better than present day standards.

Does the setting forth of health insurance principles act as an invitation for health insurance legislation?

The Canadian Medical Association takes the view that, if governments—national or provincial—should take it on themselves to introduce legislation of a medico-economic nature, we, the members of the medical profession, should know in advance where we stand and under what conditions we would be willing to cooperate. We believe that a definition of policy predicated on sound thinking, and the keeping of a proper balance between medical ideals and medical practice, is desirable, and therefore, after several years of study and discussion within our component parts, there emerged these principles on which we believe that we may safely rest our case and if necessary base our will-

ingness to negotiate. We believe too that to be forewarned is to be forearmed. Time does not permit of a detailed analysis of these principles but it is our firm belief that a careful study of them will disclose that an earnest effort has been put forth to keep inviolate what we consider to be our inalienable rights in the realm of medical practice, while at the same time the rights of the public, that great body whom we serve, have also been recognized and protected in a manner which should command respect and confidence. It will be observed that the medical profession has given ample evidence of its willingness to accept leadership and responsibility, an attitude of mind which the American Medical Association has so commendably recommended to its constituent societies and members for as many years back as my memory serves me.

While I am on the subject of leadership in relation to medical economics, it would not seem out of place to say that the best conceived and executed plan which can be devised for adequate medical care for all the people, including the poor and needy, is but a poor stopgap for those in the lowest income group if nothing is done to provide work and wages and a decent standard of living for them. It seems to me that this is a field of thought and endeavor to which some well intentioned observers and social workers might give heed by way of diversion from their favorite pastime of assailing the medical profession for its alleged inability or unwillingness to provide adequate medical care for all the people.

HEALTH INSURANCE IN BRITISH COLUMBIA

One of the major Canadian experiments in medical economics, although it might be regarded so far as having come to naught, occurred in British Columbia, Canada's most westerly province. So much interest and attention have been directed to this experiment that I now propose to give the high lights of it as they concern the medical profession.

As far back as twenty years ago, in March 1919 to be exact, the government of British Columbia appointed a select committee to inquire as to laws relating to mothers' pensions, maternity insurance, health insurance and public health nursing which were in force in other countries. Ten years later, in 1929, the government appointed a royal commission to inquire into all matters affecting maternity benefits and health insurance. In 1932 this commission reported and recommended the "early establishment in British Columbia of a suitable health insurance plan including Maternity Benefits." Nothing further was done until 1935, when the government issued a draft of a plan of health insurance. This draft bill was sent broadcast throughout the province. The public was asked to study it. Then there followed the setting up of a public hearings committee to receive expressions of opinion from public bodies, including the medical profession. Some of the points, both favorable and unfavorable, concerning the original draft bill which are of interest to the medical profession, follow:

1. The medical profession became aware of its provisions when the bill became public property.
2. It included cash benefits, which do not belong in a health insurance measure.
3. It included the indigent, for whom medical services were to be paid for by the government.
4. It provided for the insured a complete medical service with hospitalization, nursing and dental services.
5. It included all employees earning $2,400 a year or less and also their dependents.
6. There was to be paid for complete medical services, including hospitalization, nursing and dental services, not less than $10 and not more than $13.20 per insured person a year, plus 5 per cent of the total annual expenditures on medical benefits for services of a general character.
7. The health insurance fund was to be formed by
   (*a*) collecting from the employer 2 per cent of his pay roll applicable to insured persons;
   (*b*) collecting from the employee 3 per cent of his wages;
   (*c*) a contribution by the government of sufficient funds to cover the cost of medical benefits provided for indigents, plus half the cost of administration "provided that the contribution of the Province shall not be greater than $1,200,000 in any one year."

The reaction of labor to the draft bill was on the whole favorable, although there was some objection to the 3 per cent levy on wages and a certain number urged that the upper income limit of $2,400 a year should be removed entirely.

Industry protested that economic conditions in the province were such that it could not meet the additional tax which would be levied.

The medical profession, while objecting specifically to a number of the provisions in the bill (reference to which will be made later), strongly urged that, before any such legislation was enacted, a more intensive study be made not only in British Columbia but throughout Canada as a whole as to the need for legislation of this character.

In the spring of 1936 the legislature of British Columbia presented a radically altered bill, practically all the alterations being, in the opinion of the medical profession, of a retrograde character. Here are some of them:

1. The government agreed to advance $50,000 for organization purposes, and there its financial responsibility ceased, obviously an actuarially undetermined piece of financing.
2. The indigent were excluded, with no alternative provision being made for them or their dependents outside the act. In other words, the indigent were left on the doctor's doorstep.
3. Many classes of low wage earners were excluded, including casual laborers, domestic servants, farm laborers and all employees earning $10 a week or less.
4. Old age pensioners and widow pensioners were excluded from the benefits.
5. Contributions to the fund were greatly reduced,
   (*a*) from the employer 2 per cent instead of 3 per cent and
   (*b*) from the employee 1 per cent instead of 2 per cent, a reduction in funds that made the act still further actuarially questionable.
6. A complete medical service was still to be provided, including hospitalization and one half of the drug bill, although the financial basis had been gravely lowered.
7. Remuneration of the medical profession was to be "at the rate of not less than $4.50 per annum per insured person eligible to receive benefits."

From a medical point of view, the act was clearly undesirable and unacceptable.

Although the party in power regarded the act as a government measure, it had a stormy passage through the legislature, finally emerging on March 31, 1936, to become effective on a date to be fixed by proclamation. After the passing of the act a health insurance commission was appointed, with very wide powers. The commission invited the medical profession to assist in working out details which would be satisfactory to both sides. Realizing that the legislature had spoken, the medical profession had no option but to attempt to make the best of the situation; but finally, after many con-

ferences, the committee representing the medical profession advised the commission that it could not accept the provisions of the act or work under it. It was decided to ask the entire medical profession to vote on the subject. When the ballots were counted, it was disclosed that 622 doctors had voted against accepting the scheme while thirteen had voted in favor of it. Forthwith, the medical profession announced in the public press that it could not undertake to provide medical services under the act, and on February 19 the premier of the province announced the postponement of the operation of the health insurance act, sine die. Three years has passed and the act remains inoperative. From the point of view of the medical profession, certain facts stand out and definite conclusions may be drawn:

1. The provincial government failed to secure the approval of the medical profession to the medical provisions incorporated in its health insurance act. This was a grave error because not only must the cooperation of the medical profession be obtained before any such act can be operated successfully but a government if it is to frame a satisfactory act should consult the medical profession at the outset and, to a large degree, be guided by medical advice. It is the right of the medical profession to be consulted and it should stand by that right.

2. A complete health insurance plan costs money, and no such plan will be successful if undertaken on a financial shoestring; furthermore, no scheme will be satisfactory or complete that does not (*a*) adequately remunerate those rendering service and (*b*) make provision for the indigent, old age pensioners and all low wage earners who are unable to provide medical services for themselves.

The British Columbia medical association is a division of the Canadian Medical Association, and the fight of the doctors in that province for economic justice and security was a fight in which the doctors throughout Canada felt themselves to be engaged. Consequently the Canadian Medical Association whole-heartedly supported the medical profession of British Columbia in the stand which it took. It is my firm conviction that the hope of doctors for fair treatment in any country must to a large degree rest in the organized medical profession, whose interests are neither selfish nor parochial but public spirited in the broadest sense of the term.

MUNICIPAL DOCTOR SCHEME

During the past twenty-five years there has developed in the province of Saskatchewan a plan which is known as the municipal doctor scheme. The story of the beginning and growth of this plan is a story of the origin of a unique system of socialized medicine which has served a definite purpose in providing medical services which it is alleged could not easily have been obtained through private practice.

For the purpose of local government, the province is divided into geographic units of from six to twelve townships, each township being an area 6 miles square. Units are authorized to fix a mill rate of taxation for the provision of medical services. In 1914 one of these rural municipalities had practically no crop and the local doctor was faced with the discouraging prospect of looking for a new field of endeavor or, as he viewed it, staying to starve. The municipality assumed the responsibility of taxation and guaranteed him $1,500 for one year if he would stay. He did so, and thus began the scheme which today includes 121 doctors, 20 per cent of the 600 practicing physicians in the province, who are engaged either whole time or part time as municipal physicians. In 1919 legislation was enacted whereby a rural municipality might engage a physician on a salary not exceeding $5,000 a year. In 1930 legislation permitted this salary to be increased to $5,500 in some of the larger municipalities. In 1933 towns and villages in the province were extended similar taxing privileges, permitting them to engage physicians on a salary basis. In the main the contracts call for the provision of general medical services to include minor operations, maternity care, medical health inspection and immunization of school children. Practically all the contracts exclude major operations.

An analysis of this service brings out the following points with respect to remuneration for services rendered:

1. In a large group of municipalities, a capitation fee of as low as $1.24 to as high as $3.66 provides general medical services to a total of 77,421 persons for $147,798.00, at an average per capita rate of $1.94 a year.

2. In another group, of thirteen municipalities, including 116 townships, a capitation fee from $1.29 to $2.81 provides, in addition to general medical services, major operations within the competence of the municipal physician to perform, to a total of 30,964 persons for $59,050, or an average per capita rate of $1.91 a year.

3. In a third group of municipalities, the capitation basis varies from 92 cents to $3.32 a year. A total of 34,276 persons pay a basic salary of $39,630, or a capitation rate averaging $1.74 a year.

One observer who has had an excellent opportunity to appraise the service has provided me with the following information:

Points in favor of the plan:

1. A medical service is provided where otherwise there might have been none.

2. Pioneers who are developing the country have been guaranteed medical care, much to the advantage of the country as a whole.

3. The doctor is guaranteed a certain definite income, from which he can budget.

4. The plan tends to promote preventive medicine, in that it is to the doctor's advantage to keep his people well.

Points against the plan:

1. It interferes with private practice in some areas.

2. It interferes with free choice of physician.

3. In many instances there is too much work for any one man to undertake.

4. The pay, although a burden on the municipality, is in the majority of instances inadequate for the work done.

5. Very few municipal doctors find time for postgraduate work or vacations.

6. A municipality is not a satisfactory unit for payment.

7. The doctor has no way of exacting remuneration from the municipality.

8. The scheme lends itself to doctors' bidding against one another for positions.

9. Municipalities on occasion allow a contract with a doctor to lapse, perhaps owing him considerable money, and then advertise for another incumbent.

10. The municipality may arbitrarily cut the salary, and the doctor can take it or leave it.

11. The doctor has no guaranty of tenure of office and therefore little protection such as would prompt him to buy property.

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12. Arrears of salary in some instances exceed $10,000, with little prospect of their being paid.

A breakdown of one contract is shown in the accompanying table.

According to the unit basis of cost of service, it is observed that the doctor was paid as follows:

1. Office consultation (2 units), $0.46.
2. House call (3 units), $0.69.
3. Confinement (15 units), $3.45.
4. Major operation (50 units), $11.50.
5. Minor operation (10 units), $2.30.
6. Immunization (3 units), $0.69.

Why do well qualified medical practitioners accept these municipal doctor contracts? There are perhaps many reasons, but most emphatically it must be stated that the primary motivating influence is a desire to secure a guaranteed income while serving humanity in one's chosen profession. On the basis of remuneration received for work done, the plan should not be considered as providing adequate financial returns. Salaried appointments as municipal physicians would appear to leave much to be desired.

THE ONTARIO PLAN

Early in the recent depression through which the entire world has been passing, governmental authority in Canada decided that the unemployed and their dependents were entitled to food, fuel, shelter and clothing at the expense of the state. The medical profession contended that medical care for these less fortunate of our citizens was just as essential as food, fuel, shelter and clothing and that the state should not expect the doctor to contribute this service entirely at his own expense. In some parts of Canada this contention was heeded, and I shall now deal with the plan which was adopted in the province of Ontario.

Four years ago the Ontario division of the Canadian Medical Association entered into an agreement with the government of the province on the following terms:

For each person in the province in receipt of relief, including dependents (and at that time the number was approximately 400,000), the government agreed to provide the sum of 25 cents a month. The association in turn undertook to provide for relief recipients general practitioner services in the office and in the home, together with domiciliary obstetric services. There was to be as complete freedom of choice of doctor and patient as obtains in private practice. No finer opportunity could have been afforded the medical profession to demonstrate its ability to carry out the very principles it had been advocating for years, namely that no third party should intervene in a plan of providing medical services to a cross section of the community.

Within thirty days the medical association, working through its fifty component branches, set up ninety-six medical committees, representing more than 4,000 practicing physicians, it being the duty of these committees in the respective areas to scrutinize and assess medical accounts and pass them on to the central administrative medical committee for final adjudication and payment. Rather than set up a special tariff for relief recipients, the association agreed to apply its regular tariff to the service, namely $2 for an office call, $3 for a house call and $25 for a normal confinement, with additional allowances for mileage. It was of course recognized at the outset that the money available would not be adequate to pay assessed accounts in full; the profession did not expect that the taxpayers, of whom they form a part, would be called on to pay 100 per cent of the medical bills for their less fortunate fellow citizens. Accordingly the plan adopted was as follows: Bills having been taxed, i. e. checked over as to their accuracy and fairness (and one should here interpolate that a very small minority of the profession were found to be unfair with their accounts), were then added up and the total was divided into the amount of money available each month, each doctor being paid pro rata according to the amount of his account and each month being considered a unit. At the end of two years the amount of money which the government agreed to pay was increased to 35 cents per relief recipient monthly, out of which the profession agreed to pay the druggists 6 cents a month for the necessary drugs and supplies.

What has four years of experience in providing medical care to this rather large number of people taught? I think a number of things of very definite interest and importance, certainly to Canada and perhaps to the medical profession in other parts of the world:

1. The profession has demonstrated that it can organize and conduct satisfactorily a plan of medical services on a group basis without any political, governmental or sociological interference.

Contract of a Municipal Doctor

Area covered		350	square miles
Population		2,800	
Work done for the year 1936:			
Office consultations		3,600	
Country calls		800	
Maternity cases		51	
Minor operations		90	
Major operations (within his competence)		15	
Immunization		300	persons
Salary paid			$4,500
Major operations (amount collected)			$ 300
Total income			$4,800
From this deduct:			
For transportation (13,000 miles by car; 1,200 miles by snow plane; 250 miles by train)	$1,550		
For drugs	300		$1,850
Net amount for services rendered			$2,950

2. The services available to a group such as that concerned demonstrated very clearly that morbidity quickly rises when resistance to meeting costs is removed. It was estimated at the inception of the scheme that morbidity might stand at somewhere between 6 and 8 per cent. What are the actual morbidity figures for this experiment? For the first year 12.78 per cent, for the second year 14.37 per cent and for the third year 15.40 per cent.

In respect of remuneration to the profession, the records show the following payments in relation to total accounts as taxed and approved: first year 45 per cent, second year 38 per cent and third year 51 per cent. (In the third year the 35 cents a month capita rate applied.)

Thus it will be seen that the doctors are contributing practically 50 per cent of the cost of medical services to this group. Moreover, information is now available as to the actual cost of such services, which information heretofore was not available in Canada.

What about the quality of the services rendered? A short time ago, while engaged in preparing this paper, I directed this question to the minister in the government under whose régime general relief is administered. He assured me that, so far as the government is concerned, the service is highly satisfactory, that the

medical profession appears to be doing a splendid piece of work, that the relief recipients are satisfied with the care they are receiving and that the taxpayers who are providing the funds (over four years, approximately 4 million dollars) are satisfied that they are getting full value for their money.

At no time has there been interference of any kind from any source with the administration of the scheme by the medical profession. Valuable statistics have been made available with regard to morbidity and service costs. A complete and unmistakable answer has been made to that section of the public who doubt the ability of the medical profession to organize and provide adequate medical care to a large group of people without the intervention of a third party. There is abundant proof of the satisfaction and confidence which has accrued to the profession in finding that it was able to discharge its responsibility to itself for the proper carrying out of this experiment in medical economics. If the profession can conduct an experiment of this magnitude for 400,000 people in the province of Ontario, I have not the slightest doubt that the profession anywhere on this great continent is capable of carrying out a plan of medical services for any section of the public so long as the administration is entrusted to the medical profession itself. The relationship between physician and patient has not been disturbed, and one cannot see why, in any scheme of group practice, that same relationship should not prevail. If medical science is to progress, if standards of medical practice are to continue to improve, if we are going to keep medicine pointing ever upward and onward to finer attainments and thus greater public benefit, we must see to it that we preserve against assault from every side a position of intimate relationship with the public whom we serve without the intervention of a third party.

CITY PLANS

In a number of cities in Canada somewhat similar schemes for medical relief have been devised.

For the past five years a complete medical service has been supplied in greater Winnipeg to those on relief. The average number has varied from 45,000 to 35,000. Treatment is provided in the office, home and hospital; dental, optical, x-ray and laboratory services are included.

A doctor, employed by the city, interviews all who apply for treatment, emergency patients excepted, and gives a permit to enable the patient to consult the doctor of his choice. The city reserves the right to have minor ailments, e. g. constipation and scabies, treated by the doctor controlling medical relief.

A board of four doctors, two employed by the city and two representing practitioners, decides disputed questions, grants or refuses authority for operations, unusual treatments and expensive laboratory or x-ray tests, and renders decisions on contested accounts. In many instances it seeks the assistance of a specialist or a consultant.

Accounts are rendered monthly by each practitioner on a reduced scale of fees. There is no capitation limit or fixed budget, but no doctor may collect more than $150 a month.

In five years, disciplinary action has been requested for four practitioners of more than 300 who provide the service. There have been no cases of proved neglect by doctors, no tragedies and singularly few complaints by patients. Again the medical profession has supplied the answer to the question of its ability to provide adequate medical care without the intervention of a third party.

VOLUNTARY HEALTH INSURANCE

In the field of voluntary health insurance an interesting experiment began in Ontario some eighteen months ago, when an organization known as Associated Medical Services was incorporated with the official blessing of the Ontario Medical Association, to offer complete medical, surgical, hospital and nursing service to those members of the community who were willing to budget for illness by paying regular premiums as follows.

Subscriber, $2 a month.
First dependent, $1.75 a month.
Second dependent, $1.50 a month.
Third dependent, $1.25 a month.
Fourth and other dependents, $1 a month.

During the first six months, 733 subscribers were enrolled. During the past twelve months this number has increased to 4,020. In one city in the province, 826 physicians of 950 have so far expressed their willingness to cooperate. There is of course free choice of doctor, and in all other respects the patient enjoys the same independence and freedom of action as obtains under ordinary private practice. The plan, organized and conducted by medical men on a nonprofit basis, appears to be giving complete satisfaction to an ever growing number of forehanded persons who desire to insure at a fixed premium against unpredictable costs of illness. Moreover, the relationship between doctor and patient is undisturbed, again emphasizing and proving the desirability and necessity of such confidential contact, and intervention, which is restricted to economics and not medical practice, appears in no wise to work a hardship but rather to solve for many persons a hazard which formerly produced much concern and often financial disaster.

CONCLUSIONS

Time does not permit of reference to other schemes being worked out in different parts of Canada. My only purpose in presenting a paper of this nature may be summarized as follows:

1. On behalf of the medical profession of Canada, I wish to say that organized medicine is fully conscious of the medical needs of the public and is willing and able to meet these needs.

2. The medical profession has demonstrated its ability to provide medical services for large groups of people under terms which give complete satisfaction to the recipients of the service and to the medical profession.

3. A critical analysis of various schemes already in existence discloses weaknesses in many of them which the profession properly recognizes and refuses to accept.

4. From experience in Canada I am confident that there is no need for persons outside the medical profession to assume that, unless they take it on themselves to arrange for adequate medical care for all the people, such care will be denied those who need it most.

5. And, finally, may I say that I bring you greetings from your colleagues north of the 49th parallel of lattitude and wish to assure you that, like yourselves, we recognize that the interests of medicine know no geographic boundaries or other limitations and that, with you, we look forward confidently to never ending opportunities to serve our fellow men, not forgetting the high calling which is ours.

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OFFICIAL NOTES

ABSTRACT OF MINUTES OF MEETING OF BOARD OF TRUSTEES

The regular annual session of the Board was held at the Association headquarters on Feb. 16 and 17, 1939. Space is not available for a complete report of the deliberations of the meeting, but a brief report is here given.

APPOINTMENTS

The following appointments and additions were made to editorial boards of special journals, councils, bureaus and committees. Unless otherwise stated, the appointee succeeds himself:

American Journal of Diseases of Children, Dr. Horton Casparis of Nashville to succeed Dr. L. R. DeBuys; *Archives of Dermatology and Syphilology*, Dr. Charles C. Dennie of Kansas City, Mo., to succeed Dr. Martin F. Engman; *Archives of Internal Medicine*, Dr. Reginald Fitz; *Archives of Neurology and Psychiatry*, Drs. Louis Casamajor and S. W. Ranson; *Archives of Ophthalmology*, Dr. W. L. Benedict; *Archives of Otolaryngology*, Dr. Chevalier Jackson and Dr. James A. Babbitt of Philadelphia as additional member; *Archives of Surgery*, Dr. Waltman Walters and, as additional members, Dr. Arthur W. Allen of Boston, Dr. Alfred Blalock of Nashville, Dr. Lester R. Dragstedt of Chicago and Dr. W. E. Dandy of Baltimore; Council on Physical Therapy, Drs. W. E. Garrey, W. W. Coblentz and John S. Coulter; Council on Pharmacy and Chemistry, Drs. David P. Barr, J. Howard Brown and C. W. Edmunds, and Dr. Perrin H. Long of Baltimore to succeed Dr. E. M. Bailey; also as additional members Dr. Elmer L. Sevringhaus of Madison, Wis., and Dr. Stuart Mudd of Philadelphia; Council on Foods, Dr. C. S. Ladd of Bismarck, N. D., and Dr. Tom D. Spies of Cincinnati to succeed Drs. E. M. Bailey (resigned) and Joseph Brennemann; Council on Industrial Health, Dr. R. T. Legge of Berkeley, Calif., to succeed Dr. Morton R. Gibbons (resigned); Committee on Scientific Research, Dr. Noble Wiley Jones; Committee for the Protection of Medical Research, Drs. E. C. Cutler, A. C. Ivy and William Pepper, and Dr. John L. Rice of New York to succeed Dr. M. C. Winternitz.

The following physicians were appointed to represent the American Medical Association: Dr. Roger I. Lee, a member of the Board of Trustees, to represent the Association at the meeting of the British Medical Association in Aberdeen, Scotland, in July 1939; Drs. Arthur W. Booth and Thomas S. Cullen, members of the Board of Trustees, to represent the Association at the meeting of the Canadian Medical Association in Montreal, the week of June 19.

DATE FOR NEW YORK SESSION

The week of June 10, 1940, has been selected as the date for the New York session of the Association.

ADVISORY COUNCIL ON MEDICAL EDUCATION, LICENSURE AND HOSPITALS

The Board authorized the publication of an editorial on the proposed establishment of an advisory council on medical education, licensure and hospitals, and on the expressed willingness of the Council on Medical Education and Hospitals to participate in such a conference provided the House of Delegates so authorizes.

CONFERENCES WITH RELATED ORGANIZATIONS

A conference between the Board of Trustees of the American Medical Association and representatives of the American, Catholic and Protestant hospital associations was held on Tuesday, February 14, and the Board voted to invite representatives of certain other related organizations to meet with it in the future to consider plans of medical service for the American people.

ADVISORY COMMITTEE TO COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Dr. W. S. Leathers and Dr. Herman Weiskotten were added to the Advisory Committee to the Council on Medical Education and Hospitals and have accepted appointment. The committee now consists of Drs. S. S. Goldwater, Paul Titus, M. T. MacEachern, W. P. Wherry, J. R. Neal, Donald C. Balfour, C. B. Pinkham, Herman Weiskotten and W. S. Leathers, and Father Alphonse Schwitalla.

IMMIGRATION OF EUROPEAN REFUGEES

Authorization was given for the publication of an editorial in THE JOURNAL giving information obtained by the Bureau of Legal Medicine and Legislation relative to the number of refugee physicians admitted to the United States since 1930, and the names of the two committees which have been established to investigate the refugee problem and which have received grants from the federal government for such investigations.

COMMITTEE ON AMERICAN HEALTH RESORTS

A Committee on American Health Resorts, consisting of Drs. Bernard Fantus (chairman), Chicago; W. S. McClellan, Saratoga Springs, N. Y.; E. M. Smith, Hot Springs, Ark.; M. B. Jarman, Hot Springs, Va., and W. P. Holbrook, Tucson, Ariz., has been appointed.

REVISION OF "PERIODIC HEALTH EXAMINATION"

Authorization was given for the revision of "Periodic Health Examination" and for the selection of a committee to handle the revision.

APPROPRIATIONS

Appropriations for the conduct of the work of the various councils, bureaus and committees, as well as the usual appropriations for medical and therapeutic research, were made.

SPECIAL ISSUE OF ARCHIVES OF PATHOLOGY IN HONOR OF DR. S. B. WOLBACH

Authorization was given for the publication of a special issue of the *Archives of Pathology* in July 1940 to commemorate the sixtieth birthday of Dr. S. B. Wolbach, who has been a member of the editorial board of that periodical since its establishment in 1926.

COOPERATION WITH NATIONAL CONGRESS OF PARENTS AND TEACHERS

The Board authorized the printing of the usual number of medical record forms for the summer round-up of school children by the National Congress of Parents and Teachers.

EDUCATIONAL CAMPAIGN IN SYPHILIS

The Board expressed its approval of the educational campaign in venereal diseases conducted by the U. S. Junior Chamber of Commerce in St. Paul in 1937, and of similar campaigns for the control of syphilis by the U. S. Junior Chamber of Commerce in other cities if conducted along similar lines with the approval of the local society.

MISCELLANEOUS

Consideration was given to numerous other subjects and to routine matters.

REORGANIZATION OF JOINT COMMITTEE WITH NATIONAL EDUCATION ASSOCIATION

The Joint Committee on Health Problems in Education, in which the American Medical Association and the National Education Association have cooperated since 1911, held its twenty-eighth annual meeting at Cleveland, February 27 and 28. Dr. Thomas D. Wood, who had been chairman of the committee since its inception, announced his intention to resign at the 1938 meeting. The vice chairman, Dr. Charles C. Wilson of Hartford, Conn., immediately appointed a subcommittee to make plans for the future of the Joint Committee. Dr. Wood's resignation was submitted in July 1938 to the president of the National Education Association, by whom he had been appointed, and was accepted. Dr. Charles C. Wilson was named acting chairman, pending reorganization of the committee.

At the meeting in Cleveland the committee was reorganized under the following general principles: 1. A Joint Committee shall be established of the two organizations as a whole and not of any department or section of either one. 2. It shall include no representatives of other health agencies and shall be strictly a joint committee of the participating organizations. 3. The committee shall consist of five representatives of each organization, who shall be appointed to serve one, two, three, four and

five years respectively for their first terms and for five year terms thereafter and shall not be eligible for more than two successive terms. 4. The committee shall have a chairman, a vice chairman and a secretary-treasurer, who shall be elected annually from among the members of the committee by the Hare system of proportional representation. The broad principles of rules of procedure were laid down and adopted. This reorganization had previously been approved in principle by the Trustees of the American Medical Association and the Executive Committee of the National Education Association.

After the consideration of routine business, the members of the committee voted to resign in a body, effective immediately on the appointment of the members of the new committee as provided in the reorganization.

The principal objectives of the committee were defined as follows: (*a*) to promote a better understanding between physicians and teachers; (*b*) to bring to bear on health problems in education the best thought in medicine and in pedagogy; (*c*) to identify health problems in education and endeavor to promote constructive solutions for them; (*d*) to seek publication of the conclusions of the committee through the columns of the periodical publications of the participating organizations whenever possible and to publish pamphlets principally as reprints or when special indications for such publication exist.

RADIO BROADCASTS

The radio broadcasts by the American Medical Association and the National Broadcasting Company, under the title Your Health, continue as previously announced each Wednesday over the Blue network of the National Broadcasting Company at 2 p. m. eastern standard time (1 p. m. central standard time, 12 noon mountain time, 11 a. m. Pacific time).

Changes in this time will be necessary to take into consideration daylight saving time. Announcement of this change will appear in advance in THE JOURNAL. Owing to network conflicts the Chicago broadcast will not occur at 1 p. m. on Wednesday but there will be a rebroadcast from a recording over Station WENR at 8 o'clock each Monday evening. The program broadcast each Monday will be identical with the network program of the preceding Wednesday.

It has been necessary to curtail the length of the series by omitting the last two programs, which would have been broadcast June 14 and June 21. The series, therefore, will end with the broadcast scheduled for June 7.

The next three programs to be broadcast, together with their dates and their topics, are as follows:

March 29. Animal Diseases Transmitted to Man.
April 5. Don't Believe Everything!
April 12. Learning to Live.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 4492, the Treasury Department Appropriation Bill, was amended in the Senate to increase from $440,000 to $700,000 the amount appropriated by the bill for carrying out the provisions of the National Cancer Institute Act. The bill, having passed the House and Senate, will go to conference, at which House and Senate differences will be adjusted.

Bills Introduced.—H. R. 4634, introduced by Representative Carter, California, provides that citizens of the United States who during the World War enlisted as and served in the status of civilian employees of the Signal Corps, United States Army, American Expeditionary Forces, shall be considered as having served in the military service of the United States. H. R. 4652, introduced by Representative Voorhis, California, provides that in the administration of laws pertaining to veterans, retired enlisted men of the Army, Navy; Marine Corps and Coast Guard, who served during a war period as recognized by the Veterans' Administration and who have been honorably discharged from such service, shall be entitled to hospitalization and domiciliary care in Veterans' Administration facilities on parity with other war veterans. H. R. 4893, introduced by Representative Angell, Oregon, provides for the reorganization of agencies of the government. H. R. 4934, introduced (by request) by Representative May, Kentucky, proposes to authorize the appointment of female dietitians and female physiotherapy and occupational-therapy aides in the Medical Department of the Army. H. R. 4942, introduced by Representative Stefan, Nebraska, proposes to make it unlawful to sell certain spirits containing alcohol produced from materials other than cereal grains.

DISTRICT OF COLUMBIA

Bills Introduced.—S. 1805, introduced by Senator King, Utah, and H. R. 5067, introduced by Representative Randolph, West Virginia, propose to establish a lien for moneys due hospitals for services rendered in cases caused by negligence or fault of others.

STATE MEDICAL LEGISLATION

Colorado

Bills Passed.—The following bills passed the house March 15: H. 466, proposing as a condition precedent to the issuance of a license to marry that each party to a prospective marriage present a physician's certificate that he or she has submitted to such examination, including a standard serologic test, as may be necessary for the discovery of syphilis and that in the opinion of the physician the party either is not infected with syphilis or is not in a stage of that disease which may become communicable; and H. 470, proposing to require every physician attending a pregnant woman to take or cause to be taken a sample of her blood within ten days of the first professional visit and to submit that sample to an approved laboratory for a standard serologic test for syphilis.

Delaware

Bills Introduced.—S. 151 proposes that in any civil or criminal cause a licensed physician or a nurse shall not be allowed or compelled to disclose any information "which may be required [sic] while attending a patient in a professional capacity, and which is necessary to enable him or her to act in that capacity," except in the case of a patient under 16 when the information indicates that the patient has been the victim of a crime. S. 225 proposes that in the distribution of the assets of an insolvent decedent funeral expenses not to exceed $400 and reasonable bills for medical attendance and for nursing during the last sickness shall be paid before any other claims against the estate.

Georgia

Bill Passed.—H. 623 passed the house March 14, proposing so to amend the state constitution as to permit the county of Tift to increase its bonded indebtedness by $50,000 to erect and equip a hospital "where medical and surgical treatment and care may be provided those in need of such."

Illinois

Bill Passed.—H. 408 passed the house, March 14, proposing to appropriate $75,000 to the Department of Public Health for the purchase of pneumonia serum for distribution to the citizens of the state.

Bills Introduced.—H. 391 proposes to require every physician or other person attending in a professional capacity a pregnant woman to take or cause to be taken a sample of her blood at the time of the first examination and to submit that specimen to a laboratory approved by the State Department of Public Health for an approved serologic test for syphilis. Such test may, on request of any physician, be made free of charge by the State Department of Public Health or the health departments of cities, villages and unincorporated towns maintaining health departments. S. 197 proposes that whenever in a civil or criminal proceeding issues arise on which the court deems expert evidence desirable it may appoint one or more experts, not exceeding three on each issue, to testify at the trial. The appointment of court expert witnesses, however, is not to preclude the parties from calling expert witnesses of their own, pro-

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vided the party calling an expert witness gives the court and the adverse party reasonable notice of the name and address of the expert to be called.

Maine

Bill Introduced.—S. 378 proposes to authorize the court in a bastardy proceeding to order the complainant, her child and the putative father to submit to one or more blood grouping tests. The results of such tests will be admissible in evidence only in cases in which exclusion is established.

Maryland

Bill Introduced.—H. 545 proposes to require every physician, pharmacist, dentist, hospital or nurse treating any person in Montgomery County for any injury which apparently has been caused by an automobile accident or by a lethal weapon to report the facts, as soon as practicable, to the county police.

Missouri

Bills Introduced.—H. 605 purports by its title to amend the laws relating to midwifery by adding a new section, which would permit the State Board of Health to license a person to operate an "institution or establishment attempting to treat the sick or others afflicted with bodily or mental infirmities . . . by massage, exercise, steam, electrical, or therapeutic baths, or rubbing with alcohol or other medicative substances, by and through the means of any system of remedial treatment consisting of kneading or ribbing [sic] the body, or by careful regulation of diet, food, etc., commonly known as Alimentary therapeutics, or by immersing, showering, massaging or washing the body or part of the body, by exposing the body to steam, vapor, hot air, or in which a current of electricity passes through the water, or in the application of hot sand or other heated material applied to the body, through or by any means whatsoever, including x-ray, electrical apparatus, mechanical contrivances, steam or electric cabinets, or otherwise." H. 604 proposes to enact a law regulating the manufacture, distribution or advertising of foods, drugs, cosmetics and devices.

New Hampshire

Bill Introduced.—S. 30, to amend the medical practice act, proposes to restrict licensure to citizens of the United States.

New York

Bills Introduced.—S. 1209 proposes to prohibit the retail sale and distribution, except on the written prescription of a licensed physician, dentist or veterinarian, of barbital, sulfonethylmethane (trional), diethylsulfur diethylmethane (tetronal), carbromal, paraldehyde, chloral, chloral hydrate or chlorobutanol. S. 1391 proposes to prohibit the performance of an operation the purpose or effect of which is to change or alter the skin or tissues of the fingers or thumbs so as to alter such person's finger patterns or fingerprints. The bill also prohibits the performing of any operation of plastic surgery on a known criminal the purpose or effect of which is to alter his personal appearance and make identification and apprehension difficult. A physician, the bill proposes, must report immediately by telephone, if possible, to appropriate police officials all requests for operations which seem to come within the provisions of the bill. S. 1424 and A. 1927 propose to enact a law to be cited as the New York uniform food act to regulate the manufacture, distribution and advertising of foods. A. 1982 proposes to authorize the formation of corporations to operate non-profit medical expense indemnity plans. A. 1923 proposes to authorize medical societies to form non-profit medical service corporations to operate non-profit medical service plans whereby medical treatment and care may be provided by the corporations to be formed or by physicians with whom they have contracted to such of the public as become subscribers to the plans under contracts which entitle each subscriber to certain medical care and treatment. At least a majority of the directors of such a corporation must be at all times members of a medical society but at least two directors must be laymen.

Oklahoma

Bill Introduced.—S. 219 proposes to enact a law regulating the manufacture, sale and distribution of foods, drugs, cosmetics and devices.

Ohio

Bills Introduced.—H. 565 and H. 627 propose to authorize the sexual sterilization of epileptic, insane or feebleminded inmates of state institutions.

Pennsylvania

Bills Introduced.—H. 431 proposes to require every physician to notify the appropriate local health officer of every case of tuberculosis which comes under his professional observation. If that health officer learns that any person afflicted with tuberculosis is unable or unwilling to conduct himself in such a manner as not to expose persons with whom he may be associated to danger of infection, he may petition the court of common pleas of the appropriate county for an order directing the admission of such person to any approved hospital or institution established for the care of persons suffering from tuberculosis. The bill also proposes to make it the duty of the appropriate health officer to provide care, treatment, isolation or hospitalization to afflicted persons who are unable to pay for such care and treatment. H. 440, to amend the workmen's compensation act, proposes to make compensable as an "occupational disease" a contagious disease of any kind contracted by a person employed in or about any hospital to which persons having contagious diseases are admitted for treatment.

Rhode Island

Bills Introduced.—S. 160, to amend the chiropractic practice act, proposes, among other things, that chiropractors "shall be entitled to the same rights and privileges pertaining to public health which may be imposed or given by law or regulation upon or to physicians qualified to practice medicine . . . except they shall not write prescriptions for drugs for internal medication," thus omitting the provision in the present law which specifically prohibits them from performing major surgery. H. 809 proposes a system of compulsory and voluntary sickness insurance, the benefits of which are to consist of cash and all forms of medical, dental and hospital service. Persons employed as farm laborers and persons employed by an employer having less than three employees in personal or domestic service are to be excluded from the compulsory insurance of the bill but are to be entitled to participate in the voluntary insurance. All other employees are embraced in the compulsory features of the bill.

South Carolina

Bill Passed.—S. 330 passed the senate March 8, proposing to authorize the establishment and operation of a county hospital in the county of Charleston. The hospital is to provide medical attention and care for the indigent sick of the county and to provide hospitalization for others at such rates of pay as are commensurate with their ability to pay. The board of the hospital is also authorized to enter into contracts with any individual or corporation or professional organization for the furnishing of medical or surgical care on such terms and conditions as it deems advisable.

Tennessee

Bills Enacted.—S. 411, nominally to amend the osteopathic practice act, has been enacted as chapter 150, Public Acts 1939. It enlarges the legal scope of osteopathy; the present law which this act replaces permits a licentiate merely "to practice osteopathy" and seems not to permit a licentiate under it to practice surgery or to use drugs. The new law, however, provides that "Such certificate [referring to a certificate to practice osteopathy] shall entitle the person to whom it is granted to practice osteopathy in any county in this State, in all its branches, as taught and practiced by the recognized associated colleges of osteopathy, with the right to use such drugs as are necessary in the practice of osteopathy, surgery, and obstetrics, including narcotics, antiseptics, anesthetics and biologicals." H. 836 has been enacted as chapter 102, Public Acts 1939, creating in the Department of Public Health a "Medical Care Division," to be headed by a licensed physician appointed by the governor. This division, subject to the supervision of the Department of Public Health, is to administer and expend all sums that may be appropriated by the general assembly or made available by the federal government to the state, or from contributions from local units of government, or from other sources, for medical care in

accordance with any future act of the general assembly or of Congress "having as its objective the inauguration of a State and/or national program of medical care."

Texas

Bills Introduced.—Senate Committee Substitute for Senate 127 proposes to authorize the organization of corporations to operate non-profit hospital service plans whereby hospital care may be provided by such corporations, through hospitals with whom they have contracted, to subscribers to the hospital service plans. S. 352 to amend the provisions of the Texas workmen's compensation act which limits the period during which an employer must provide medical and hospital services to an injured workman to the first four weeks after an industrial injury, proposes to require an employer to provide such services where needed up to ninety-one days from date of injury.

Wisconsin

Bills Introduced.—S. 239 proposes that the provisions of the medical practice act shall not apply "to a total number of fifty medical physicians who may have been engaged in the actual practice of medicine or surgery in Germany, Austria, Czechoslovakia, or Poland" to whom licenses are issued in the manner set forth in the bill. Briefly, the bill proposes that during the year commencing July 1, 1939, any physician residing in the state who may have, within the last ten years, been engaged in the continuous practice of his profession in Germany, Austria, Czechoslovakia or Poland may have a license issued to him by the board of medical examiners if he files an affidavit concerning his moral and professional character and the extent and nature of his practice in Europe and also presents an affidavit signed by at least two licensed physicians in the state concerning their knowledge of the applicant. The bill proposes that the number of licenses issued shall not exceed fifty for the year indicated and that no more than five such licenses may be issued in any one calendar month. A. 443, to amend the pharmacy practice act, proposes, in effect, to permit persons other than licensed pharmacists to sell aspirin, boric acid, camphorated oil, cod liver oil, iodine, milk of magnesia, mineral oil and peroxide. A 436 proposes to provide for the sexual sterilization of feebleminded, epileptic or insane inmates of state institutions. S. 251, to amend the law requiring male applicants for licenses to marry to present a physician's certificate as to freedom from venereal disease, proposes to require such certificates with respect to both parties to prospective marriages.

WOMAN'S AUXILIARY

Kansas

Mrs. Charles C. Tomlinson, president of the auxiliary to the American Medical Association, was the speaker at the meeting of the board of the auxiliary to the Kansas State Medical Society in Hays in December. Almost all of the nineteen members present lived more than a hundred miles away.

Louisiana

The auxiliary to the Calcasieu Parish Medical Society distributed Thanksgiving baskets for needy families of Lake Charles. The auxiliary won over the American Legion Auxiliary in a radio quiz contest.

Col. Hollingsworth Barrett spoke on "Peace" at the November meeting of the auxiliary to the Caddo Parish Medical Society held in Shreveport.

The Orleans auxiliary is holding a series of lectures for members on the subject of socialized medicine, arranged on the advice of Dr. Shirley Lyons, president of the Orleans Medical Society.

Minnesota

The auxiliary to the Hennepin County Medical Society sponsored the annual sale of articles made by patients of Glen Lake Sanatorium November 18 and 19. The proceeds, amounting to more than $1,200, went to the patients who made the articles that were sold. At the December meeting each member and her guest gave a silver offering for "Sarahurst," a convalescent home for patients discharged from Glen Lake Tuberculosis Sanitarium.

The auxiliary to the Ramsey County Medical Society sponsored the play "The Dream of a Clown," given at the St. Paul Auditorium. The proceeds will be used for philanthropic purposes by the auxiliary.

The auxiliary to the Washington County Medical Society met at the home of its president, Mrs. J. W. Stuhr, November 8. Donations were given to the scout fund and to the high school "Radio Educational Project."

The auxiliary to the St. Louis County Medical Society held a rummage sale the proceeds of which were used for philanthropic activities.

Nearly 10,000 talks were written by Minnesota high school students on the subject "Tracking Down the Foe of Youth," a contest conducted by the Minnesota Public Health Association in cooperation with the woman's auxiliary of the state medical association. This was the eighth annual contest in which the auxiliary participated. Mrs. Martin Nordland, Minneapolis, former state president, represented the auxiliary on the committee of judges. The best talk from each high school, selected by a preliminary public speaking contest, was entered in the state contest. From the manuscripts submitted, the judges selected the six talks that were presented in special broadcasts over WCCO the week of December 12.

Mississippi

The auxiliary to the Central Medical Society met January 3 at the home of Mrs. B. J. Marshall, Whitfield. Mrs. Henry Boswell announced the anonymous gift of $5,000 to establish the Preventorium Trust Fund. The Mississippi auxiliary has had as one of its projects the needs of the children at the state preventorium. It has provided funds for toys and handwork material. For years an essay contest on the preventorium and its work has been conducted in the junior high schools, a pamphlet arranged by the auxiliary and published by the state board of health being used as the source of information. This year at the close of the essay contest the auxiliary undertook to finish the trust fund, already started, to care permanently for the work they were financing. When this plan became public, a friend of the institution, a man who wishes to remain unknown, volunteered to create a perpetual fund to care for the needs of the children, which he has done. The auxiliary may now carry on its educational work and be relieved of its financial obligation.

The auxiliary assisted in the Christmas Seal Sale, having prepared several short talks which were sent to each auxiliary and each councilor and were given by members before clubs and church societies and over the radio.

New Mexico

The auxiliary to the New Mexico Medical Society met at the home of Mrs. Harrison Brehmer in Albuquerque. Dr. L. Werner reviewed the book "The Country Doctor." At a later date it met at the home of Mrs. L. F. Elliott in Albuquerque. Christmas stockings were prepared for children at the Christina Kent Day Nursery.

New York

Mrs. Milton Bergmann, president, spoke on the meaning of the caduceus before the auxiliary to the Medical Society of the County of Kings, December 13. Mrs. Edmund D. Clark, former president of the auxiliary to the Medical Society of the State of Indiana, was a guest. Another feature of the program was the showing of baby pictures of members of the auxiliary and an exhibit of their needlework and hobbies.

Miss Grace E. Allison, superintendent of the Samaritan Hospital, recently spoke on "Ideal Hospitals and Social Welfare" before the auxiliary to the Medical Society of the County of Rensselaer.

Mrs. Leslie Sullivan, president, auxiliary to the Medical Society of the County of Schenectady, was guest speaker before the auxiliary to the Medical Society of the County of Saratoga, December 5.

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Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ADDITIONAL MEDICAL COLLEGE NEWS AND ARTICLES APPEAR IN THE STUDENT SECTION, PAGE 1213.

ALABAMA

New Regulations Governing License to Practice.—The Alabama State Board of Medical Examiners recently amended its rules governing the issuance of certificates of qualification to practice medicine. After the collegiate year 1938, any applicant for a certificate to practice will be required to serve at least one year of internship before such certificate will be issued. He will be permitted to take the examinations but the certificate will be withheld until the applicant complies with this requirement. Concerning graduates of European schools, the regulations read:

In the case of an applicant, whether native born or foreign born, who has graduated from a European School, the following rules shall obtain:
1. Present a certified statement from the National Board of Medical Examiners of the United States setting forth that he has successfully passed all examinations, written and oral, required by this board; and
2. Either (*a*) present a certificate of qualification to practice medicine (a license) issued in the country of his nativity or in the country in which the medical school from which he graduated is located or (*b*) present a certificate setting forth that he has satisfactorily passed the federal examinations necessary to obtain licensure to practice medicine in the country in which the medical school from which he graduated is located.
All foreign born applicants shall first present at least first citizenship papers.

CALIFORNIA

Physicians' Art Exhibit.—The first annual exhibition of the Los Angeles Physicians' Art Society was held in the lounge of the Los Angeles County Medical Association recently. A special feature was a demonstration of stereoprojection of Kodachrome slides taken in Alaska by Dr. Orrie E. Ghrist. Officers of the society include Drs. Harold L. Thompson, president, and Katherine M. Close, secretary-treasurer.

Society News.—Lee de Forest, Ph.D., Los Angeles, discussed "The Beginnings of Radio and the Application of High Frequency Current to Modern Medical Practice" before the Hollywood Academy of Medicine March 9.——Dr. William J. Kerr, San Francisco, discussed "A New and Rational Approach to the Etiology and Treatment of Angina Pectoris" before the San Diego County Medical Society, San Diego, February 14.——Dr. Rock Sleyster, Wauwatosa, Wis., President-Elect, American Medical Association, discussed aspects of the national medical problems before a joint meeting of the Los Angeles County and Southern California medical associations March 16.

COLORADO

Western Slope Spring Clinic.—The second annual Western Slope Spring Clinic, designed for physicians of Western Colorado and Eastern Utah, will be held at Grand Junction April 1-2, under the auspices of the Mesa County Medical Society. A clinical pathologic conference will be held Saturday. On Sunday the program will include the following speakers:

Dr. Carl W. Maynard, Pueblo, The Value of the Laboratory to the General Practitioner.
Dr. Cuthbert Powell, Denver, Drainage of the Peritoneal Cavity.
Dr. Roderick J. McDonald Jr., Denver, Streptococcus Infections and Their Treatment.
Dr. Frederick M. Heller, Pueblo, The Nephritides.
Dr. Thomas Leon Howard, Denver, How Should the General Physicians and Surgeons Evaluate Bladder Symptoms in Their Patients?
Intermountain Clinic, Salt Lake City, Errors in Diagnosis and Treatment of Coronary Disease.

Railroad Physicians' Meeting.—The tenth annual meeting of the Medical Association of the Missouri Pacific Railroad was held March 15-16 in Colorado Springs at the Antlers Hotel. The speakers included:

Dr. Charles O. Giese, Colorado Springs, The Practitioner and Pulmonary Tuberculosis.
Dr. J. Sims Norman, Pueblo, Low Back Pain Associated with Spondylolisthesis.
Dr. Casper F. Hegner, Denver, Surgery of Pulmonary Tuberculosis.
Dr. John L. McDonald, Colorado Springs, Coronary Disease as an Industrial Problem.
Drs. Harry C. Bryan, Colorado Springs, and Lee B. Harrison, St. Louis, Pulmonary Tuberculosis, Missouri Pacific Employees—Results of Treatment for Fourteen Years.
Dr. Oliver B. Zeinert, St. Louis.

In addition, there was a dental program and one presented by the section on ophthalmology and otolaryngology. At the banquet Drs. George W. Bancroft, Colorado Springs, spoke on "Reconstruction of the Hip Joint"; Hillel Unterberg, St. Louis, "Therapeutic Shock in the Psychoses," and Edward B. Liddle, Colorado Springs, "Renal Tuberculosis."

DISTRICT OF COLUMBIA

Graduate Courses in Ophthalmology — Pathology and Orthoptics.—George Washington University School of Medicine, Washington, will conduct a graduate course in ophthalmology April 10-15 as well as a practical course in surgery, pathology and orthoptics April 4-8. All requests for information should be addressed to George Washington University School of Medicine, 1335 H Street N.W.

IDAHO

Personal.—Dr. Charles R. Scott, Twin Falls, has been appointed superintendent of the State School and Colony for the Mentally Deficient, Nampa, succeeding Dr. D'Orr Poynter.

Society News.—Dr. Charles H. Sprague, Boise, among others, discussed "Clinical Axioms of Pulmonary Tuberculosis" before the South Side Medical Society at Twin Falls January 12.——A recent meeting of the North Idaho District Medical Society was addressed in Lewiston by Dr. Frank C. Gibson, Potlatch, on "Fractures of the Jaw."

ILLINOIS

"The Family Doctor" at the Annual Meeting.—A health essay and poster contest under the title of "The Family Doctor" will be a feature of the annual convention of the Illinois State Medical Society in Rockford May 2-4. The contest is open to all high school students. Plans are also being made to hold a "Hall of Health" at the session this year.

Chicago

Hospital News.—Dr. Leo M. Davidoff, Brooklyn, lectured at Mount Sinai Hospital January 19 on "Pneumo-Encephalography and the Appearance of the Normal and Pathological Encephalogram."

The Mary Redfield Plummer Lecture.—Clarence C. Little, Sc.D., director, American Society for the Control of Cancer and of the Roscoe Jackson Memorial Laboratory, Bar Harbor, Maine, will deliver the first Mary Redfield Plummer Memorial Cancer Lecture under the auspices of the cancer research committee of the Chicago Woman's Club March 29. His subject will be "Recent Advances in Cancer Research." The lecture is one in a series that has been sponsored for a number of years by the woman's club but was named in honor of Mrs. Plummer following her death last year. Mrs. Plummer was formerly parliamentarian of the club and one of the pioneer workers in cancer among club women.

Symposium on Syphilis.—The clinical program committee of the venereal disease commission of the Chicago Medical Society has arranged to utilize the vast clinical material at the Municipal Hygiene Clinic, 27 East Twenty-Sixth Street, for presentation in the various phases of the subject of syphilis. The first of a series of monthly programs will be held March 27. Dr. Alexander S. Hershfield, consultant, Municipal Social Hygiene Clinic, will deliver the first lecture on neurosyphilis and present cases. Drs. Hyman H. Goldstein, Chicago State Hospital, and Victor E. Gonda, clinical professor of psychiatry, Loyola University School of Medicine, will carry on the discussion. The meetings, which are free, will be in the nature of a graduate course, according to the Chicago Medical Society *Bulletin*.

Allergists Oppose Oral Pollen Treatment.—The following resolution has been adopted by the Chicago Society of Allergy: The members of the Chicago Society of Allergy, partly from their own experience and partly from a survey of both the published and some of the unpublished experimental and clinical results of oral pollen therapy, believe that the evidence of beneficial effect is at present not sufficient to warrant the commercial promotion of material for oral pollen therapy. Because of their controversial and contradictory nature, the published results of oral pollen therapy are inadequate to justify the commercial promotion of such a product. In addition, our investigation indicates that many men who have used oral pollen therapy have failed to publish their work because of the unsatisfactory results obtained. We therefore urge that the commercial promotion of oral pollen therapy should be deferred in the interest of the public and of the general practitioner until further experimentation now in progress has been reported.

Dr. Carl Beck Honored.—A dinner will be held March 28 in honor of Dr. Carl Beck, formerly professor of surgery, Chicago College of Physicians and Surgeons, now the University of Illinois College of Medicine, in recognition of his seventy-fifth birthday and his completion of fifty years in the practice of medicine. A group of Dr. Beck's friends is sponsoring the dinner at the Stevens Hotel at 7 o'clock. A native of Milin, Austria, Dr. Beck took his degree in medicine at the Royal and Imperial University of Prague, 1889. He served as assistant in surgery and gynecology in the clinics at Prague, assisting first Professor Guessenbauer and later Dr. Schauta, gynecologists of Vienna. He made several trips to America as steamer surgeon in 1889-1890, settling in Chicago in the latter year to follow the general practice of medicine. He founded the St. Anthony Hospital with the Sisters of Joliet. He is also a founder of the German Medical Society and the Bohemian Medical Society of Chicago. He is the author of "Principles of Surgery," 1905, and "The Crippled Hand and Arm," 1925, as well as of many articles in medical journals.

KENTUCKY

Personal.—Dr. John L. Phythian, Fort Thomas, was the guest of honor at a dinner recently at St. Elizabeth's Hospital, Covington, celebrating his twenty-fifth year as a member of the staff. Dr. Clifford N. Heisel, Covington, and Mr. U. J. Howard, commonwealth's attorney of Kenton County, were the speakers. —— Dr. James B. Mason, London, was recently elected president of the National Bank of London.

Society News.—Dr. Walter E. Vest, Huntington, W. Va., addressed the Boyd County Medical Society, Ashland, February 7 on the national health program.——Dr. Harrison H. Shoulders, Nashville, Tenn., addressed the Third District Medical Society in Bowling Green January 25 on medical economics and Dr. James T. Gilbert Jr., Bowling Green, on "Diabetic Emergencies."——Dr. Emmet F. Horine, Louisville, addressed the Franklin County Medical Society, Frankfort, February 10, on "Cardiac Emergencies."——Dr. Thomas M. Marks, Lexington, presented a paper on epilepsy before the Montgomery County Medical Society, Mount Sterling, January 10.——Dr. Edward C. Ellett, Memphis, Tenn., addressed the Jefferson County Medical Society, Louisville, January 16 on "Dacrocystorhinostomy," as the guest of the Louisville Eye and Ear Society. Drs. James Murray Kinsman and William M. Ewing, Louisville, addressed the society February 20 on "Practical Application of the Electrocardiogram" and "Primary Malignant Tumors of Bone" respectively.——Dr. Claude T. Wolfe addressed the Louisville Medico-Chirurgical Society February 10 on "The Relation of Diseases of the Nasal Accessory Sinuses to Eye Disorders."

LOUISIANA

Pneumonia Laboratory.—A laboratory for the study of pneumonia control will be established at the Louisiana State University Medical Center, New Orleans, under the direction of Dr. Claude D. Head Jr., passed assistant surgeon, U. S. Public Health Service. Miss Helen Jarl, bacteriologist of the service, will be in charge. Once the unit is fully established, it will be maintained by the state, the public health service being responsible only for organization and for payment of the bacteriologist's salary, according to the *Tiger*.

MASSACHUSETTS

Personal.—Dr. Morris Yorshis has resigned as clinical director of the Worcester State Hospital to enter the private practice of neurology and psychiatry; he had held the position for seven years, having been associated with the hospital for twelve.——Dr. Domizio A. Costa, Boston, has been appointed a member of the Massachusetts state board of registration in medicine.

Mrs. Roosevelt Guest Speaker.—Mrs. Eleanor Roosevelt, wife of the President, will speak in Worcester Memorial Auditorium, April 27, under the auspices of the Worcester District Medical Society. The proceeds of the admissions will be used as the nucleus of a fund to finance the construction of a medical center building in Worcester to house the society's library and scientific activities.

Special Society Meetings.—Dr. Clarence Guy Lane discussed "Indications for the Use of Physical Agents in Dermatology" before the New England Society of Physical Medicine in Boston February 15.——Among others, Drs. Benjamin Castleman and Aubrey O. Hampton addressed the New England Pathological Society in Boston February 16 on "Correlation of Postmortem Chest Teleroentgenograms with Autopsy Findings, with Special Reference to Pulmonary Embolism and Infarction."——The New England Heart Association was addressed, among others, February 27, by Drs. Roy L. Swank, Andrew Yeomans and Reno R. Porter on "The Reaction of the Cardiovascular System of Dogs to Intravenous Infusion."

MICHIGAN

New Deputy State Health Commissioner.—Dr. Albert S. McCown, who recently completed a course at Johns Hopkins University School of Hygiene and Public Health, Baltimore, for a certificate in public health, has been appointed deputy state health commissioner, it was reported February 3. A graduate of Johns Hopkins University School of Medicine in 1918, Dr. McCown has served as director of the child welfare department of the Washington state department of health and as director of the division on maternal and child health, Children's Bureau, U. S. Department of Labor, Washington, D. C. In his new appointment, Dr. McCown will supervise county health programs and direct local health services, it was stated.

Society News.—Dr. Edwin M. Jameson, Saranac Lake, N. Y., addressed a joint meeting of the Detroit Obstetrical and Gynecological Society and the Wayne County Medical Society February 6 on "The Problems of Pregnancy and Tuberculosis." The medical section of the county medical society and the Detroit Diabetic Association were addressed February 13 by Dr. Irvine McQuarrie, Minneapolis, on "Significance of the Inorganic Metabolism in Diabetes Mellitus."——Dr. Plinn F. Morse, Detroit, discussed "Causes of Sudden Death" before the Ingham County Medical Society, Lansing, March 21. Dr. E. Perry McCullagh, Cleveland, reviewed "Recent Trends in Clinical Endocrinology" at a meeting February 21.

Graduate Conferences for Physicians.—Dr. Benjamin W. Carey Jr., assistant professor of pediatrics, Wayne University College of Medicine, Detroit, will open a series of graduate conferences for physicians April 5, when he will discuss "Current Practice in the Treatment of Pneumonia in Infancy and Childhood: Report of Studies of Types of Organisms Involved, of the Status of Specific Sera and of the Use of Pyridine-Sulfanilamide." Other speakers in the series include:

Drs. Richard M. McKean, Gordon B. Myers, Daniel P. Foster, Samuel S. Altshuler, all of Detroit, Diabetes.

Dr. David Slight, Chicago, Relationship of Psychiatry to Private Practice.

Dr. Cyrus C. Sturgis, Ann Arbor, Menace and Treatment of Obesity; Some Common Sense Remarks.

A course in pediatrics will be presented at the Henry Ford Hospital, Children's Hospital of Michigan and the Herman Kiefer Hospital, all of Detroit, April 3-5. Both programs are sponsored by the Wayne County Medical Society, Detroit Department of Health, Wayne University College of Medicine, Michigan Branch of the American Academy of Pediatrics, Michigan Society for Mental Hygiene, Inc., and the Michigan Department of Health.

MISSOURI

The Jackson County Forum.—Dr. Harold S. Diehl, Minneapolis, will be the speaker in the Jackson County Health Forum April 19, on "The Common Cold." Subsequent lecturers in the monthly meetings include Drs. Oscar W. Bethea, New Orleans; Louis J. Karnosh, Cleveland; Rock Sleyster, Wauwatosa, Wis.; Thurman B. Rice, Indianapolis, and Franklin C. Bing, Ph.D., Chicago. Father Alphonse M. Schwitalla spoke in January on "How a Medical School Makes Doctors"; Dr. William A. O'Brien, Minneapolis, in February on "Health Problems of Middle and Late Life," and Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, in March on "Cancer." The forum was organized in January 1938 under the auspices of the auxiliaries of the accredited hospitals of Jackson County with the approval of the county medical society. The monthly lectures are open to the public. The city cooperates by providing free of charge a hall in the Municipal Auditorium, and the public relations committee of the Jackson County Medical Society acts in an advisory capacity to the health forum in selecting their speakers and planning their programs.

NEW JERSEY

Personal.—Dr. William J. Carrington, Atlantic City, president of the Medical Society of New Jersey, recently received the annual achievement award of the Atlantic City Press Club. The honor is granted each year to the citizen considered to have done most to publicize Atlantic City.

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Society News.—At a meeting of the Essex County Medical Society, Newark, March 9, the speakers were Drs. Arthur R. Casilli, Elizabeth, "Organization and Function of a Cancer Clinic"; Edward W. Sprague, "Surgery in the Treatment of Cancer," and Milton Friedman, "Radiation Therapy in Cancer." Dr. Harrison S. Martland gave a demonstration of cancer material through the episcope.——Dr. Robert A. Kilduffe, Atlantic City, addressed the Essex County Anatomic and Pathologic Society in Newark March 23 on clinical utilization of studies of the blood.——Dr. Thomas M. McMillan, Philadelphia, addressed the Camden County Medical Society, Camden, March 7, on "Rheumatic Fever and Rheumatic Heart Disease."

NEW YORK

Lead Poisoning Traced to Nipple Shields.—The death of an infant from lead poisoning traced to lead nipple shields used by the mother recently led the Public Health Council to adopt an amendment to the Sanitary Code prohibiting the sale or use of such shields. The state department of health conducted a survey of drugstores, hospitals and physicians. The information showed that the use of lead nipple shields is not common but that it is easy to procure them.

Gastro-Enteritis Outbreak.—About half the 200 occupants of an institution in Dutchess County were affected in a recent outbreak of gastro-enteritis traced to raw milk. No cases developed after December 22, when a pasteurized supply of milk was substituted for the raw supply. Mastitis was found in twelve of twenty-four cows in the herd supplying the institution's private dairy, and culture of the milk yielded a variety of organisms, including Bacillus coli and Staphylococcus aureus. One of the milk handlers had a digestive disorder for several days prior to the outbreak but continued to handle the milking machine.

New York City

Rockefeller Physiologist Drowned.—Alfred George Jacques, Ph.D., assistant in general physiology at the Rockefeller Institute for Medical Research, was drowned February 20 near Hamilton, Bermuda, while dredging in shallow water for biologic specimens. Dr. Jacques, a native of England, had been on the institute staff since 1926 except for one year when he was a teaching fellow at Harvard University. He was 42 years old.

Medicomilitary Exhibit.—An exhibit on medicomilitary preparedness will be presented at the Seventy-First Regiment Armory April 10 under the auspices of the medical officers of the organized reserve of the metropolitan area. In addition to exhibits that were shown at the first event of this kind last year, there will be novel presentations by veterinary and chemical warfare officers. Exhibits that will be repeated from last year include the four-wheel drive ambulance that can climb a 45 degree grade in rainy weather; a convertible ambulance body that can carry five ambulatory or four litter patients; an airplane crash outfit, and an arctic rescue unit. National Guard officers and officers of the regular army, the medical, dental and veterinary professions, medical students and nurses and the public are invited to attend. The Armory is at Thirty-Fourth Street and Park Avenue. The exhibit will be on view from 7:30 to 11 p. m.

Society News.—The Cornell University College Alumni Association will hold its annual "Spring Day" April 20.——Mr. Louis H. Pink, superintendent of the Insurance Department of the State of New York, addressed the Medical Society of the County of Queens February 28 on "Voluntary Hospital and Medical Association and the State." Dr. Joseph Harkavy gave a Friday afternoon lecture March 17 on "Allergy in Relation to Internal Medicine."——Speakers at a meeting of the New York Roentgen Society March 20 were Drs. William Harris, Robert I. Walter and Arnold L. Bachman on "Treatment of Ovarian Carcinoma" and Jacob R. Freid and Henry Goldberg, "Postirradiation Changes in the Lung: A Clinical, Roentgenological and Pathological Study with Emphasis on the Late and Terminal Stages."——Dr. Ramon Castrovicjo addressed the Sociedad Medica Hispano-Americana of New York February 28 on "Ocular Surgery."

NORTH CAROLINA

Personal.—Dr. Ballard L. Norwood Jr., now on duty at a CCC camp at Greenwood, S. C., has been appointed health officer of Granville County to succeed Dr. Joseph A. Morris, resigned. Dr. Norwood will take a course in public health at the University of North Carolina before assuming the position July 1.

Addition to Duke Hospital.—Plans for an addition of 200 rooms to Duke Hospital, Durham, were recently announced. The new building will add from 100 to 120 beds, bringing the hospital's capacity to more than 550 beds. The new unit will be five stories high, the first two floors to be devoted to the private clinics and the upper three to private and semiprivate rooms. It is expected that the building will be ready for occupancy in the summer of 1940.

Mental Hygiene Meeting.—Drs. Lauren H. Smith, Philadelphia, and Frederic M. Hanes, Durham, addressed the North Carolina Mental Hygiene Society at its third annual meeting in Durham February 24 on "Community Aspects of Mental Hygiene" and "The Role the Medical School Should Play in Promoting Mental Hygiene" respectively. Officers were reelected as follows: Dr. William Raney Stanford, Durham, president; Mr. John S. Bradway, Durham, vice president, and Harry W. Crane, Ph.D., Chapel Hill, secretary.

OHIO

Grant for Research.—The Commonwealth Fund of New York recently granted to the Institute of Pathology at Western Reserve University School of Medicine, Cleveland, $8,360 to be used in studies of the chemistry of immunity. This work has been in progress for two years under the leadership of Enrique Eduardo Ecker, Ph.D., associate professor of immunology.

Medical Library Association.—Dr. Carl H. Lenhart was reelected president of the Cleveland Medical Library Association at the annual meeting January 20 and Dr. Frank S. Gibson was made chairman of the board of trustees. Dr. Charles W. Stone, retiring chairman of the board, reported that the library now has more than 53,000 volumes; it subscribes to 444 journals in various languages and during 1938 had 12,828 readers. Dr. Louis J. Karnosh gave an address at the meeting entitled "The Psychiatrist Considers Bibliomania."

County Society's Radio Program.—The Summit County Medical Society, Akron, is presenting a series of dramatized radio programs entitled "The Durand Baby" over Station WADC in Akron, which began Saturday, March 11. Local physicians accompany the dramatizations with a three minute summary of the educational features of the program. Actors are being obtained from the Radio Speech Department of the University of Akron. The scripts are furnished by the Bureau of Health Education of the American Medical Association. Additional series of dramatized programs are contemplated when "The Durand Baby" series has been finished.

PENNSYLVANIA

Society News.—Dr. George J. Thomas, Pittsburgh, among others, addressed the Westmoreland County Medical Society at a meeting at the Mountain View Hotel near Greensburg, on recent developments in anesthesia.——Dr. Russell L. Cecil, New York, addressed the Cambria County Medical Society, Johnstown, March 9 on pneumonia.——Dr. Frank W. Burge, Philadelphia, addressed the Lebanon County Medical Society, Lebanon, March 14 on "Trends in the Diagnosis and Treatment of Pulmonary Disease."——Dr. Charles Mazer, Philadelphia, addressed the Lycoming County Medical Society, Williamsport, March 10 on "The Uses and Abuses of Endocrine Products."

Philadelphia

Society News.—At a meeting of the Philadelphia Neurological Society February 24 the speakers included Drs. Michael Scott and Ernest E. Aegerter on "The Possible Role of Arsenic in Disturbances of the Nervous System Attributed to Avitaminosis; with Special Reference to Pellagra"; Ernest A. Spiegel, Philadelphia, and Norman P. Scala, Washington, D. C., "Interference Phenomena Between Optokinetic and Labyrinthine Nystagmus."

Portrait of Henry Phipps.—An oil painting of Mr. Henry Phipps was presented January 20 to the Henry Phipps Institute of the University of Pennsylvania by members of the Phipps family. Thomas S. Gates, LL.D., president of the university, accepted the gift, which was presented by Dr. Charles J. Hatfield, associate director of the institute, on behalf of the donors. Dr. Esmond R. Long, director, reviewed the institute's scientific achievements.

Annual Banquet.—The Northern Medical Association of Philadelphia held its ninety-third annual banquet, March 20, with Dr. David Riesman as toastmaster. The guests of honor

were Drs. Isidore W. Held, clinical professor of medicine, New York University College of Medicine, New York; George M. Dorrance, professor of faciomaxillary surgery, University of Pennsylvania School of Medicine; Randle C. Rosenberger, professor of preventive medicine and bacteriology, Jefferson Medical College, and Edward J. G. Beardsley, clinical professor of medicine, Jefferson Medical College. Dr. Beardsley spoke on "Medicine—Yesterday, Today and Tomorrow."

Auxiliary Sponsors Annual Health Institute.—The ninth annual health institute sponsored by the Woman's Auxiliary to the Philadelphia County Medical Society will be held April 11. The program is planned to indicate "Seven Stages of Health" with the following speakers:

Dr. Philip F. Williams, Prenatal Stage.
Dr. Edward L. Bauer, Infant Stage.
Dr. Howard Childs Carpenter, Childhood Stage.
Dr. Charles W. Dunn, Adolescent Stage.
Dr. Charles L. Brown, Maturity Stage.
Dr. Pascal Brooke Bland, Menopause Stage.
Dr. Edward L. Bortz, After Sixty Stage.

Dr. Francis F. Borzell, president of the Philadelphia County Medical Society, will preside at the morning session and Mrs. Walter F. Donaldson, Pittsburgh, president of the Woman's Auxiliary to the Medical Society of the State of Pennsylvania, at the afternoon session.

Pittsburgh

Society News.—At a meeting of the Pittsburgh Surgical Society March 10 the speakers were Drs. Stuart N. Rowe, on "Treatment of Brain Abscess"; John W. Stinson, "Pulsating Tumor of the Orbit"; James A. Cowan Jr., Samuel R. Haythorn and William H. Guy, "Hemangiomata, Their Pathology and Technic of Removal," and George V. Foster, "Technic of Fixation of Bone Grafts."——At a meeting of the Pittsburgh Academy of Medicine February 28 the speakers were Drs. George E. Martin, on "Primary Tuberculosis"; deWayne G. Richey, "Chemotherapy in Otolaryngology," and Harold W. Jacox, "Considerations of Lymphoblastoma from a Radiologist's Standpoint."

TENNESSEE

Graduate Lectures in Pediatrics.—The committee on graduate instruction of the Tennessee State Medical Association is sponsoring a course in pediatrics organized in the same manner as one on obstetrics recently completed. Instruction began February 20 in the first circuit, which includes the following towns: Bolivar, Brownsville, Covington, Jackson and Selmer. The course will cover the state in two years. The lecturer is Dr. Willis H. Thompson, Minneapolis. The subjects to be covered will be the growth and development of the normal infant, breast feeding, artificial feeding of the normal infant, difficult feeding cases, the premature infant, gastrointestinal diseases, prevention and treatment of contagious diseases, care of the allergic child, tuberculosis and congenital syphilis and respiratory infections. Dr. John M. Lee, Nashville, is chairman of the committee on postgraduate instruction. Contributing agencies that have made this work possible are the Vanderbilt University School of Medicine, Nashville; the University of Tennessee School of Medicine, Memphis; the Tennessee State Medical Association, the State Department of Health and the Commonwealth Fund of New York.

Society News.—Drs. James E. Paullin, Atlanta, and James S. McLester, Birmingham, addressed the Davidson County Medical Society, Nashville, January 26 on "Diabetes" and "Newer Knowledge of Nutrition and Vitamins" respectively. ——Nashville physicians presented the program at a meeting of the Tri-County Medical Society (Henry, Weakly and Carroll counties) in Huntington February 7: Drs. John O. Manier, on "Recognition and Management of Certain Vascular and Cardiac Emergencies"; Charles M. Hamilton, "Value of X-Ray Therapy in Ordinary Infections," and Leonard W. Edwards, "Surgical Management of Peptic Ulcers."——Dr. William J. Cameron, Sweetwater, addressed the Monroe County Medical Society, Sweetwater, January 31 on "Physiology of the Ovary." ——Dr. John M. Boylin, Bristol, Va., addressed the Sullivan-Johnson County Medical Society in Bristol February 1 on hypothyroidism.—— Dr. Harrison H. Shoulders, Nashville, addressed the Memphis and Shelby County Medical Society January 17 on medical economics.—— Dr. Charles Gordon Heyd, New York, addressed the Nashville Academy of Medicine and Davidson County Medical Society February 7 on "Gallbladder Disease."

VIRGINIA

Personal.—Dr. Robert B. Hightower, who has been instructor in pediatrics under the auspices of the department of clinical and medical education of the Medical Society of Virginia, has resigned to accept a position as assistant director of school medical inspection in the District of Columbia.—— Dr. Reid White Jr., Lexington, who has been physician to Washington and Lee University for several years, has been appointed full time medical director.

Hospital News.—Dr. David L. Harrell Jr., first assistant physician at the State Colony for Epileptics and Feebleminded, Colony, has been appointed superintendent of a new institution at Petersburg for the care of the Negro feebleminded. The new colony was to start operations January 1.——Dr. George B. Arnold, superintendent of the State Colony for Epileptics and Feebleminded, Colony, has been appointed to the state advisory board on mental hygiene.——Dr. James B. Nichols, medical director of Catawba Sanatorium, Catawba Sanatorium, has been named superintendent, a new position, according to a newspaper report.

WEST VIRGINIA

Pilgrimage to Pittsburgh.—The West Virginia Obstetrical and Gynecological Society will make its annual clinic pilgrimage April 3-4 to Pittsburgh. The group will visit operative clinics at Magee, Pittsburgh and Mercy hospitals and will hear a symposium on gynecology and obstetrics, led by Dr. Paul Titus at St. Margaret Memorial Hospital. They will also visit Allegheny General and Montefiore hospitals.

Society News.—The Taylor County Medical Society was the first in the state to report all 1939 dues paid.——Dr. Louis H. Douglass, Baltimore, addressed the Kanawha County Medical Society, Charleston, February 14 on "Analgesia in Obstetrics."——Dr. James Edwin Wood Jr., Charlottesville, Va., addressed the Raleigh County Medical Society, Beckley, February 16 on "Recent Advances in the Study of Hypertension and Their Influences on Therapy."

GENERAL

Physicians Wanted for CCC Duty.—Vacancies now exist in the Civilian Conservation Corps in the Eighth Corps Area wherein the services of civilian physicians can be utilized as contract surgeons. Applicants should be graduates of class A medical schools. Applications should be addressed to The Surgeon, Headquarters Eighth Corps Area, Fort Sam Houston, Texas.

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Sections have been arranged for the following topics: general biology: variation and taxonomy; general biology: microbiologic chemistry and physiology; viruses and viral diseases; rickettsiae and rickettsial diseases; protozoology and parasitology; fungi and fungous diseases; medical and veterinary bacteriology, agricultural and industrial microbiology, and immunology. Inquiries should be addressed to the office of the general secretary, Dr. Martin H. Dawson, College of Physicians and Surgeons, Columbia University, 620 West One Hundred and Sixty-Eighth Street, New York.

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Foreign Letters

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(From Our Regular Correspondent)

Feb. 21, 1939.

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Alcohol is rapidly absorbed from the stomach and intestine and distributed by the blood to the different organs. A variable but always small proportion escapes unchanged in the breath and urine. The rest is slowly oxidized, disappearing from the blood at the rate of about 0.185 cc. per kilogram of body weight an hour. The energy liberated by the combustion of a moderate amount of alcohol can be used by the body, and therein lies the whole value of alcohol as a food. But in this value alcohol has no advantage over the much cheaper sugar, and its action as a drug has to be considered. This is mainly on the nervous system. Alcohol has no practical value as a direct stimulant of the heart in cases of threatened failure. When it appears to promote recovery from fainting, this is due to its irritant action on the mucous membrane of the month and is comparable to the action of smelling salts. When, in conditions of more protracted cardiac weakness, alcohol has a beneficial effect, this is due mainly to its mildly sedative action, relieving the centers which modify the action of the heart from the disturbing influence of pain and anxiety. The mildly narcotic action of alcohol is the most important effect from the therapeutic point of view. It may relieve distress and promote sleep; but it must be prescribed with care and judgment. During convalescence or in a chronic illness it may improve the appetite.

ALCOHOL AND ROAD ACCIDENTS

Alcohol impairs skilled movements, and this fact is most important in the driving of automobiles. Vernon made an experimental study, by means of an artificial motor-driving apparatus, on the effects of small quantities of alcohol (from 20 to 45 cc. in the form of whisky) taken on a practically empty stomach, on the driving capacity of various persons. He found that by far the majority drove more quickly and more erratically than in normal circumstances. For the most part they did not realize that they were driving faster, but one deliberately drove more slowly because he realized his reduced control and several drove for short distances with a rush and then slowed down before again driving faster. There was far greater variability not only in speed but also in accuracy and carefulness after alcohol had been taken. This was noticeable even after the amount of alcohol was reduced to

were Drs. Isidore W. Held, clinical professor of medicine, New York University College of Medicine, New York; George M. Dorrance, professor of faciomaxillary surgery, University of Pennsylvania School of Medicine; Randle C. Rosenberger, professor of preventive medicine and bacteriology, Jefferson Medical College, and Edward J. G. Beardsley, clinical professor of medicine, Jefferson Medical College. Dr. Beardsley spoke on "Medicine—Yesterday, Today and Tomorrow."

Auxiliary Sponsors Annual Health Institute.—The ninth annual health institute sponsored by the Woman's Auxiliary to the Philadelphia County Medical Society will be held April 11. The program is planned to indicate "Seven Stages of Health" with the following speakers:

Dr. Philip F. Williams, Prenatal Stage.
Dr. Edward L. Bauer, Infant Stage.
Dr. Howard Childs Carpenter, Childhood Stage.
Dr. Charles W. Dunn, Adolescent Stage.
Dr. Charles L. Brown, Maturity Stage.
Dr. Pascal Brooke Bland, Menopause Stage.
Dr. Edward L. Bortz, After Sixty Stage.

Dr. Francis F. Borzell, president of the Philadelphia County Medical Society, will preside at the morning session and Mrs. Walter F. Donaldson, Pittsburgh, president of the Woman's Auxiliary to the Medical Society of the State of Pennsylvania, at the afternoon session.

Pittsburgh

Society News.—At a meeting of the Pittsburgh Surgical Society March 10 the speakers were Drs. Stuart N. Rowe, on "Treatment of Brain Abscess"; John W. Stinson, "Pulsating Tumor of the Orbit"; James A. Cowan Jr., Samuel R. Haythorn and William H. Guy, "Hemangiomata, Their Pathology and Technic of Removal," and George V. Foster, "Technic of Fixation of Bone Grafts."——At a meeting of the Pittsburgh Academy of Medicine February 28 the speakers were Drs. George E. Martin, on "Primary Tuberculosis"; deWayne G. Richey, "Chemotherapy in Otolaryngology," and Harold W. Jacox, "Considerations of Lymphoblastoma from a Radiologist's Standpoint."

TENNESSEE

Graduate Lectures in Pediatrics.—The committee on graduate instruction of the Tennessee State Medical Association is sponsoring a course in pediatrics organized in the same manner as one on obstetrics recently completed. Instruction began February 20 in the first circuit, which includes the following towns: Bolivar, Brownsville, Covington, Jackson and Selmer. The course will cover the state in two years. The lecturer is Dr. Willis H. Thompson, Minneapolis. The subjects to be covered will be the growth and development of the normal infant, breast feeding, artificial feeding of the normal infant, difficult feeding cases, the premature infant, gastrointestinal diseases, prevention and treatment of contagious diseases, care of the allergic child, tuberculosis and congenital syphilis and respiratory infections. Dr. John M. Lee, Nashville, is chairman of the committee on postgraduate instruction. Contributing agencies that have made this work possible are the Vanderbilt University School of Medicine, Nashville; the University of Tennessee School of Medicine, Memphis; the Tennessee State Medical Association, the State Department of Health and the Commonwealth Fund of New York.

Society News.—Drs. James E. Paullin, Atlanta, and James S. McLester, Birmingham, addressed the Davidson County Medical Society, Nashville, January 26 on "Diabetes" and "Newer Knowledge of Nutrition and Vitamins" respectively. ——Nashville physicians presented the program at a meeting of the Tri-County Medical Society (Henry, Weakly and Carroll counties) in Huntington February 7: Drs. John O. Manier, on "Recognition and Management of Certain Vascular and Cardiac Emergencies"; Charles M. Hamilton, "Value of X-Ray Therapy in Ordinary Infections," and Leonard W. Edwards, "Surgical Management of Peptic Ulcers."——Dr. William J. Cameron, Sweetwater, addressed the Monroe County Medical Society, Sweetwater, January 31 on "Physiology of the Ovary." ——Dr. John M. Boylin, Bristol, Va., addressed the Sullivan-Johnson County Medical Society in Bristol February 1 on hypothyroidism.——Dr. Harrison H. Shoulders, Nashville, addressed the Memphis and Shelby County Medical Society January 17 on medical economics.——Dr. Charles Gordon Heyd, New York, addressed the Nashville Academy of Medicine and Davidson County Medical Society February 7 on "Gallbladder Disease."

VIRGINIA

Personal.—Dr. Robert B. Hightower, who has been instructor in pediatrics under the auspices of the department of clinical and medical education of the Medical Society of Virginia, has resigned to accept a position as assistant director of school medical inspection in the District of Columbia.——Dr. Reid White Jr., Lexington, who has been physician to Washington and Lee University for several years, has been appointed full time medical director.

Hospital News.—Dr. David L. Harrell Jr., first assistant physician at the State Colony for Epileptics and Feebleminded, Colony, has been appointed superintendent of a new institution at Petersburg for the care of the Negro feebleminded. The new colony was to start operations January 1.——Dr. George B. Arnold, superintendent of the State Colony for Epileptics and Feebleminded, Colony, has been appointed to the state advisory board on mental hygiene.——Dr. James B. Nichols, medical director of Catawba Sanatorium, Catawba Sanatorium, has been named superintendent, a new position, according to a newspaper report.

WEST VIRGINIA

Pilgrimage to Pittsburgh.—The West Virginia Obstetrical and Gynecological Society will make its annual clinic pilgrimage April 3-4 to Pittsburgh. The group will visit operative clinics at Magee, Pittsburgh and Mercy hospitals and will hear a symposium on gynecology and obstetrics, led by Dr. Paul Titus at St. Margaret Memorial Hospital. They will also visit Allegheny General and Montefiore hospitals.

Society News.—The Taylor County Medical Society was the first in the state to report all 1939 dues paid.——Dr. Louis H. Douglass, Baltimore, addressed the Kanawha County Medical Society, Charleston, February 14 on "Analgesia in Obstetrics."——Dr. James Edwin Wood Jr., Charlottesville, Va., addressed the Raleigh County Medical Society, Beckley, February 16 on "Recent Advances in the Study of Hypertension and Their Influences on Therapy."

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that contained in half a tumbler of mild beer (5 cc.). Some persons were certain that they were driving better although they were driving worse. Other experiments revealed not only an impairment of attention to signals and environment but also slower responses of the eyes, hands and feet. There were wide individual differences in the mental effects, depending on the kind of alcoholic drink and previous habituation to alcohol.

Organization of Medical Services in War

In an address to representatives of the profession at the house of the British Medical Association, Dr. Walter Elliot, minister of health, explained the medical arrangements which have been made for war. The country had been divided into twelve regions, each controlled by a regional commissioner, who would have a staff of some magnitude. On this staff would be a principal medical officer to supervise and control all the medical services in his area. He would have a number of medical officers working under him, including a hospital officer. The medical staff would see that supplies of bedsteads, bedding, dressings and drugs were available. The ministry of health would collaborate with the central and local emergency committees of the British Medical Association. The central committee had compiled a register comprising 95 per cent of the medical profession, showing each physician's special qualifications and experience and the type of war work for which he considered himself best suited. The ministry of health, having under its supervision the organization of emergency hospital services, first aid posts and ambulance services, could earmark beforehand a certain proportion of physicians to their war time jobs. There were five groups: (1) physicians who could give full time service in the forces, (2) those required for hospital service, (3) those to control the first aid posts, (4) medical officers of government departments and local authorities and (5) medical boards for examination of recruits. There would remain a number of general practitioners who would maintain the essential medical services for the civilian population. Physicians engaged whole time in civilian casualty service would be paid at rates comparable to those of the army medical service. Those serving at first aid posts would be paid at the rate of $7.50 for two hours and $15 for a longer period.

Society for the Protection of Science and Learning

The Royal Society in combination with the British Academy gave a reception to the scientists and scholars who have taken refuge in this country from the persecution on the continent and are under the care of the Society for the Protection of Science and Learning. The guests were received by the president of the Royal Society, Sir William Bragg. As usual with the receptions of the Royal Society, the ambassadors accredited to Great Britain were invited but not those of the two countries principally responsible for the persecution. This reception is one of a number of meetings to be held in London and throughout the country to make known the work which is being done for the refugees. Meetings under distinguished patronage have been held in the Great Hall of University College, London, and at the Universities of Oxford and Cambridge under the presidency of the vice chancellors. In the *British Medical Journal* Prof. Major Greenwood, F.R.S., makes an appeal on behalf of the Society for the Protection of Science and Learning. He argues that scientists trained in different schools from ours have different points of view and bring here a new outlook. What is good in their methods will be grafted onto our stock and the range of scientific work will be increased. If we are to live under the menace of a world war, to shelter medical scientists is to add to our resources. In the event of what is euphemistically described as "an emergency," the supply of technicians will fall short of the demand and the new source of supply would be valuable. Professor Greenwood draws a parallel with Huguenot persecution, by which France lost her keenest brains and nimblest fingers and other countries, particularly England, gained. Huguenots introduced new industries and distinguished themselves in all the higher walks of life. An example, among many others, is De Moivre, who came to England a poor refugee. He was a great mathematician, and the time came when Newton was asked questions about his discovery of "fluxions" (the differential calculus) and replied "Go to Mr. De Moivre; he understands these things better than I do."

Medical Arrangements for a National Emergency

In the "Statement Relating to Defense" submitted to parliament, which shows that the estimate of $7,500,000,000 given two years ago has been substantially exceeded, the medical arrangements are described as follows: Plans have been completed for finding nearly 200,000 beds in existing hospitals and institutions within twenty-four hours after a state of emergency is declared by sending patients home and transferring them to other accommodations and by putting additional beds and equipment in the wards. Another 100,000 beds will be obtained later by using parts of hospitals not at present used as wards. For this purpose 50,000 beds and mattresses have been obtained and already are in process of distribution. Orders have been placed for 200,000 blankets, and tenders have been asked for a further supply of beds. Plans have also been made for linking the hospitals in war time and are being discussed with the hospital authorities. The health departments' hospital officers have listed buildings and land adjoining hospitals suitable for expansion, and plans for new hospital units are under consideration.

The government has accepted the recommendations of the committee on evacuation in favor of the transfer, within the limits of accommodation in less vulnerable areas, from densely populated areas of persons who could be spared. An emergency scheme, prepared at the time of the crisis in September and modified in the light of experience then gained can be put into force at any time. A circular letter has recently been sent to all local authorities in receiving areas asking for an immediate survey of available accommodations. It is proposed that school children shall be evacuated under the supervision of teachers and other helpers, and young children with their mothers.

By the end of the year 40,000,000 respirators for the public had been distributed to the local authorities. During the crisis in September they were distributed to the public. Large orders have been placed for the various types of equipment required for air raid personnel. Discussions have taken place with the persons in charge of electricity, gas and water undertakings, with railway and transport companies and with the London transport board and dock and harbor authorities on the special measures to be taken for protection against air attack.

An Emergency Obstetric Service

An emergency obstetric service is being introduced in this country and has just come into force in London. The object is to deal with the acute obstetric emergencies of patients who cannot be moved to a hospital without undue risk and who cannot be adequately dealt with by the consultant obstetric service of the borough in which they live. The new service is designed not as an alternative to hospital treatment but solely for cases in which removal to a hospital would be dangerous. It is anticipated that the majority of patients for whom it will be used will be suffering from postpartum hemorrhage, and the emergency unit will have available the apparatus for blood transfusion.

In London the physician or midwife in charge will send a telephone message to the London County Council Ambulance

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Service and ask for the emergency obstetric service, giving the patient's name and address and the nature of the emergency. The emergency unit, consisting of an obstetric surgeon, a midwife and the appropriate equipment, will be sent as speedily as possible to the patient's house. Should blood transfusion be necessary a supply of stored blood will be readily obtained from the council's hospitals. Midwives have the right to call out the emergency service only if they find it impossible to obtain a physician and they find the emergency grave. The local borough council will be responsible to the obstetric surgeon for an inclusive fee of $26 for patients who cannot afford to pay his ordinary fee but reserves the right to ask the patient's husband to contribute a portion or the whole.

PARIS

(From Our Regular Correspondent)

Feb. 18, 1939.

Immunity in Venereal Lymphogranuloma

A contribution to the study of immunity possessed by different tissues toward the virus of venereal lymphogranuloma was presented by Dr. Daminopetros of the Pasteur Institute of Athens at the January 24 meeting of the Académie de médecine of Paris. The author found that in venereal lymphogranuloma each receptive tissue has specific reactive powers which determine the character and evolution of the infection. This explains why involvement of the inguinal lymph nodes will heal in from six to eight months, whereas not only will proctitis persist for a much longer time but its evolution is much slower. A specific immunity of the female genital tract is the reason why localization there is comparatively rare in spite of a prolonged sojourn of the virus in the body. The systemic immunity following an involvement of the inguinal lymph nodes or of the rectum has no influence on the local lesions. This systemic immunity, as is shown by the cutaneous allergic reaction and the resistance of other potentially receptive tissues, is due to the direct action of the virus circulating in the blood. A virus the activity of which has been destroyed by the antigen injected subcutaneously or intravenously several times a week over a long period will not give rise to the general refractory state or the allergic cutaneous reaction and cannot protect the organism against an experimental infection.

The neutralizing products of the virus which circulate in the blood have a low threshold both in cases of proctitis and in cases of lymph node involvement when either the virus or the antigen is injected. Seroflocculation is distinctly positive only during the height of the inguinal infection. The serum of convalescents when injected subcutaneously and intraperitoneally into guinea pigs does not possess any preventive action toward an experimental infection. The injection of such serum subcutaneously, intravenously or even into infected areas appears to have no influence on the evolution of proctitis or lymph node involvement. On the other hand, the injection of the antigen into the infected tissues in cases of proctitis or lymph node involvement has a distinct curative influence and hence can be utilized in treatment. The author believes that the difference in the receptivity of various tissues is probably true for all types of infections.

Multiple Electro-Encephalogram for Normal Persons

Prof. Hans Berger of Jena read a paper at the International Psychologic Congress in Paris in 1937 in which he reported observations that only a single electro-encephalogram existed for the entire brain. This would mean that the bio-electric activity is the same in all parts of the cortex. At the January 24 meeting of the Académie de médecine of Paris, Prof. A. Baudoin and his co-workers presented a paper in which their study of the question failed to corroborate the observations of Berger. They explored simultaneously two or three cerebral regions with the aid of the same number of amplificators connected with a corresponding number of oscillographs. In the majority of the experiments the activities of the precentral and occipital regions were found to be independent, even though the two regions are the seat of alpha waves which coincide occasionally. Homologous regions of the two hemispheres may give rise to tracings which resemble one another but are without total concordance in the time of acceleration of alpha waves. Synchronism of the waves is noted for only short periods in triple electro-encephalograms (three recordings at three points of a hemisphere). The conclusion which can be drawn from these observations is that all cortical nerve areas have their independent electrical activities but that the latter are more or less coordinated. The frequency of cortical waves increases from a state of inhibition to one of activity in passing a state of physiologic rest.

Certain Monkeys and the Influenza Virus

Various investigators have found that the ferret, mouse, rabbit, rat, guinea pig, hog and hedgehog are susceptible to the virus of influenza. At the January 24 meeting of the Académie de médecine of Paris Professor Levaditi reported the research of Dr. Jean Vieuchange on inoculation of certain species of monkeys with the virus of influenza. This study was made before the author was aware of similar investigations by Dochez and his co-workers and by McIntosh and Selbie.

Although the experiments made by Vieuchange have not definitely solved the problem, the concordance of results permitted the following conclusions:

1. Inoculation of Macacus rhesus by the nasal route with the virus of influenza (human strain W. S. passed through the ferret and mouse) is followed by clinical and radiologic signs which indicate a generalized infection and a simultaneous pulmonary localization.

2. The saliva is virulent during the course of an experimental influenzal infection. There is also an invasion of the blood stream. It was possible to find the virus in the blood in one experiment on the seventh and sixteenth days after inoculation.

3. The animal serum acquires a marked neutralizing power toward the influenza virus.

4. If no clinical or radiologic signs are found after inoculation, it is justifiable to speak of a nonapparent infection, because the virus can be found in the saliva and blood of the monkey during the first few days. In one animal, which showed no signs of reaction after two inoculations, neutralizing properties were demonstrable in the serum.

Program of Psychiatric and Neurologic Congress

The forty-third congress of the French Psychiatric and Neurologic Society will be held at Montpellier, in southern France, September 21-26. The president is Prof. Henri Roger of Marseilles and the vice president Dr. A. Porot of Algiers. The questions selected for special discussion are mental anorexias, immediate and late neurologic and psychiatric sequels of head injuries and follow-up studies of the criminal insane and of delinquents. Information with regard to the meeting can be obtained by writing to Prof. P. Combemale, route d'Ypres, Bailleul, Nord.

Election of Fellows in Académie de Médecine

At a recent meeting of the Académie de médecine, the leading medical society here, Dr. Philip Pagniez of Paris was elected a fellow. Drs. Castex of Buenos Aires, Argentina, and Nolf of Brussels were elected foreign associates. Dr. Pagniez is attending physician to the public hospitals of Paris and has made important contributions to the study of epilepsy.

BERLIN

(From Our Regular Correspondent)

Feb. 6, 1939.

Statistics on Epidemic Encephalitis

Dr. Nagel of the psychiatric clinic of Munich University has compiled comprehensive statistics relative to 362 patients admitted there during the years 1917-1937 with a diagnosis of epidemic encephalitis or a condition simulating this disease. Even without including the patients who were merely examined at the clinic, there were 63.5 per cent of males and 36.5 per cent of females. Cases of acute involvement exhibited a peak in 1918-1919, a second and highest peak in 1920 and a smaller peak in 1923. The months of greatest morbidity were January, February and March. Study of the distribution according to age showed persons in the second and third decades to be most often severely affected (34.6 per cent and 33.2 per cent, respectively). The mean age of the male patients was 23 and of the female patients 23¾. With regard to the symptoms, this survey contributed nothing essentially new. It is noteworthy, however, that nearly one half of the patients suffering from the sequels of epidemic encephalitis were unaware that they had experienced a disease of this nature, and 14 per cent of the erstwhile patients could give no account of their illness. Furthermore, intercurrent illness was shown to be exacerbated by parkinsonism; in 36 per cent of the cases no interval was discernible between acute illness and the parkinsonian syndrome. At the time of release from the hospital, 76 per cent of the patients had to be classed as unfit for work; 21 per cent were transferred directly from the clinic to other institutions.

Medical Problems in the Substratosphere

The substratosphere was recently discussed before the Berlin Medical Society by Professor Strughold, who holds a special commission as instructor in air medicine. Recent records for altitude (around 17,000 meters) attained by fliers were made possible by the respiration of oxygen and the wearing of clothing designed to counteract excessive pressure. Even altitudes reached in ordinary flight (from 6,000 to 10,000 meters) are important. The changes produced in bodily function by ascent to high altitudes make their clearest imprint on the reflex action; this has been proved by experimentation in the low-pressure chamber. The effect of altitude was observed to progress according to definite stages. The first manifestation is a weakening of the reflexes; this sets in simultaneously with compensatory action of the respiration and circulation after transgression of the threshold of reaction. After the threshold of disturbance has been passed the efforts of the organism to aid itself become inadequate and an exaggeration of reflexes ensues. At this stage respiration of oxygen is unqualifiedly necessary. After passage of a critical threshold the exacerbation of reflexes leads to altitude cramps, which, apart from central influences, are to be interpreted as disturbances of the normal reflexes. At this stage all manifestations are nullified by respiration of oxygen. First after the lethal threshold has been passed do the cramps reach an irremediable state, which is followed by altitude death. If at a certain level the respiration of oxygen was suspended, all the foregoing states were exactly recapitulated, as in actual ascent. The time elapsing from the interruption of the oxygen till arrival at the threshold of disturbance is the time reserve; this is dependent on the altitude attained and on the work performed and it presents great individual differences. However, the time reserve of the experimental human subject apart from slight variations is mostly a constant value. Only after performance of work does it tend to diminish. In parachute jumping from great heights a knowledge of the concept of time reserve is particularly necessary. Otherwise, as often happens, the parachute is unfolded at too great an altitude and the jumper does not reach the levels of more abundant oxygen until a period far in excess of his time reserve has elapsed. Accordingly it seems expedient that the flier who jumps from great altitudes should open his parachute first at a level in which oxygen is abundant. Thus he will be able to traverse the dangerously high levels at a greater velocity and within a period well under his time reserve.

Misuse of Boric Acid and Iodine

Acting on orders from the reichspräsident, the national minister of the interior has issued two warnings for the protection of public health. The first has to do with the use of purgatives containing boric acid. Medicaments which contain boric acid either free or in compound ought not to be taken except under medical supervision. Boric acid and its compounds, which after repeated ingestion tend to accumulate within the organism because of their slow excretion, are by no means innocuous if ingested in quantities of more than a few fractions of a gram. Preparations containing boric acid together with urea or dextrose are no exception.

Secondly, the minister warned the public against the indiscriminate use of iodized foods and medicaments that contain iodine. Iodine and its compounds, even if consumed in minute quantities, can lead, in persons sensitive to iodine, to more or less serious disturbances of thyroid activity, with the usual consequences. Iodine and its compounds are present in many pharmaceuticals recommended for infirmities of age and arteriosclerosis, for example such products as iodized bonbons, bath accessories of many sorts and cosmetics. Other iodine-containing products are recommended for the prophylaxis of colds, and there are iodized foods, iodized salt for example, which is of definite importance in the prophylaxis of goiter where the disease is endemic. Unfortunately the minister made no mention of iodized tooth pastes. These dentifrices, so abundantly and altogether irrationally advertised to the German public, represent a menace to public health, since it is impossible for the user to know the amount of iodine absorbed each day.

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Marriages

WILLIAM NELSON DONOVAN, Memphis, Tenn., to Miss Josephine Catherine Devigne of New York, January 14.

JOHN J. KOBES, Kearny, N. J., to Miss Mary C. Mullan of Buffalo, at Montreal, Que., Canada, Nov. 3, 1938.

WARREN CANDLER BAXLEY, Milledgeville, Ga., to Miss Virginia Anne Holder at Jefferson, February 14.

HUGH FARRAR RIVES, Pine Bluff, Ark., to Miss Frances Corbett of Springfield, S. C., February 1.

REGINALD HENRY MITCHELL, Washington, D. C., to Miss Katherine Palmer Foote, Dec. 11, 1938.

ARTHUR J. CATES, Knoxville, Tenn., to Miss Katherine Rhodes of Bristol, Va., Nov. 26, 1938.

ROLLIN A. DANIEL JR., Old Hickory, Tenn., to Miss Ann Kelley of Whitesville, Ky., January 5.

JOHN HUIT DELLINGER to Miss Ann A. Gaujot, both of Pennington Gap, Va., Dec. 26, 1938.

ROBERT D. DRIPPS JR., Philadelphia, to Miss Diana Rogers of New Castle, Del., February 11.

SIDNEY M. RECKLER, Denver, to Miss Sarah Carol Redman of Houston, Texas, February 24.

J. KELVIN BLEICH to Miss Carol Marjorie Rosenberg, both of Atlanta, Ga., March 11.

JAMES HARRIS DEW to Miss Martha W. Carmichael, both of Atlanta, Ga., February 18.

ROBERT CARTER DAVIS to Miss Hilda B. Brown, both of Atlanta, Ga., February 4.

MEYER VITSKY to Miss Sara Strauss, both of Richmond, Va., Dec. 27, 1938.

Deaths

Walter Hamilton Snyder ✠ Toledo, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; in 1905 member of the House of Delegates of the American Medical Association; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; past president of the Toledo Academy of Medicine and Ohio State Medical Association; for many years president of the board of the Ohio Commission for the Blind; on the staffs of the Flower Hospital and the Lucas County Hospital; aged 68; died, Dec. 29, 1938, of cardiac hypertrophy.

Beverley Randolph Kennon ✠ Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1893; past president of the Norfolk County Medical Society; member of the American Laryngological, Rhinological and Otological Society, American Ophthalmological Society and the American Otological Society; fellow of the American College of Surgeons; served during the World War; served at various times and capacities on the staffs of the Norfolk Protestant Hospital, Leigh Memorial Hospital, Norfolk General Hospital and St. Vincent's Hospital; aged 67; died, Dec. 27, 1938, of coronary thrombosis.

John White McCammon ✠ Cincinnati; Western Reserve University School of Medicine, Cleveland, 1921; assistant professor of orthopedic surgery, University of Cincinnati College of Medicine; member of the Clinical Orthopedic Society and the American Academy of Orthopedic Surgeons; fellow of the American College of Surgeons; served in various capacities on the staffs of the Cincinnati General Hospital, Jewish Hospital, Hamilton County Tuberculosis Sanatorium, Children's Hospital, Christ Hospital and the Cincinnati School for Crippled Children; aged 44; died, Dec. 30, 1938, of acute coronary thrombosis.

Albert George Kern ✠ Knoxville, Tenn.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; visiting surgeon to the Knoxville General Hospital, Fort Sanders Hospital and St. Mary's Memorial Hospital; aged 63; died, Dec. 5, 1938, in the New England Baptist Hospital, Boston, of megacolon and acute gastric ulcer.

Maurice Joseph Sittenfield ✠ New York; Bellevue Hospital Medical College, New York, 1898; member of the American Association of Pathologists and Bacteriologists, Radiological Society of North America, American College of Radiology and the American Radium Society; instructor in pathology, Columbia University College of Physicians and Surgeons, New York, 1913-1920, and associate in pathology, 1920-1932; aged 61; died, Dec. 1, 1938.

Jonathan Harvey Winterbotham ✠ Salina, Kan.; Rush Medical College, Chicago, 1896; past president of the Saline County Medical Society; formerly county health officer and member of the state board of health; on the staffs of Asbury Protestant Hospital and St. John's Hospital; aged 65; died, Nov. 27, 1938, of cerebral arteriosclerosis.

William Franklin Shumaker, Butler, Ind.; Starling Medical College, Columbus, 1890; member of the Indiana State Medical Association; formerly county health officer and health officer of Butler; aged 73; died, Dec. 2, 1938, in the Sacred Heart Hospital, Garrett, following an operation for tuberculosis of the intestine.

James C. Stewart, Anna, Ill.; St. Louis College of Physicians and Surgeons, 1891; member of the Illinois State Medical Society and the American Psychiatric Association; formerly managing officer of the Alton (Ill.) State Hospital; aged 72; died, Dec. 2, 1938, of cerebral hemorrhage.

Carl Gay Davis ✠ Hot Springs National Park, Ark.; University of Arkansas School of Medicine, Little Rock, 1934; director of the clinic, U. S. Public Health Service; served during the World War; aged 52; died, Dec. 3, 1938, in the Veterans Administration Facility, Fayetteville.

French S. Holsberry, Parsons, W. Va.; University of the South Medical Department, Sewanee, Tenn., 1899; member of the West Virginia State Medical Association; formerly member of the board of education and county health officer; aged 66; died, Dec. 3, 1938.

William Hermon Ballard, New York; Memphis (Tenn.) Hospital Medical College, 1910; served during the World War; acting assistant surgeon, U. S. Public Health Service; aged 52; died Nov. 7, 1938, of heart disease following an operation for perirectal abscess.

Jennie May Coleman, Des Moines, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1898; member of the Iowa State Medical Society; aged 70; died, Dec. 3, 1938, at the Iowa Methodist Hospital of diabetes mellitus.

Herbert Emil Koepke ✠ Cadiz, Ohio; State University of Iowa College of Medicine, Iowa City, 1928; county health officer; aged 40; died, Dec. 18, 1938, in the Ohio Valley General Hospital, Wheeling, W. Va., of uremia.

Jesse Cunningham Stilley, Ludlow, Pa.; University of Maryland School of Medicine, Baltimore, 1912; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 55; died, Nov. 26, 1938.

John Ross Petty, Au Gres, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; for many years bank president; aged 70; died, Dec. 20, 1938, of cerebral thrombosis and diabetes mellitus.

Daniel Nash Woodman, North Haven, Maine; College of Physicians and Surgeons, Baltimore, 1893; member of the Maine Medical Association; aged 77; died, Nov. 26, 1938, of melanotic sarcoma and diabetes mellitus.

Samuel Alexander McKeague, Winnipeg, Man., Canada; Trinity Medical College, Toronto, Ont., Canada, 1884; L.R.C.S., Edinburgh, and L.R.C.P., Edinburgh, 1884; aged 80; died, Dec. 9, 1938, of chronic myocarditis.

William Arthur Trader ✠ Quincy, Ill.; Chicago College of Medicine and Surgery, 1909; aged 52; on the staff of St. Mary's Hospital where he died, Dec. 23, 1938, of multiple myelomas and chronic myocarditis.

Frederic William Mitchell, Cleveland; American College of Medicine and Surgery, Chicago, 1903; aged 60; died, Dec. 5, 1938, in the Deaconess Hospital of injuries received in an automobile accident.

Thomas Miller Haskins ✠ Tulsa, Okla.; College of Physicians and Surgeons, Baltimore, 1886; Bellevue Hospital Medical College, New York, 1888; aged 79; was found dead in bed, Nov. 8, 1938.

Lee Carr Laycock, Alexandria, Ohio; Physio-Medical Institute, Cincinnati, 1882; aged 82; died, Dec. 14, 1938, in the City Hospital, Newark, of agranulocytosis and myocardial insufficiency.

Maurice Erwin Miller, Washington, D. C.; Jefferson Medical College of Philadelphia, 1895; aged 70; died, Dec. 15, 1938, in Albuquerque, N. M., of chronic myocarditis and acute pyelonephritis.

John Gabriel Speicher, Coconut Grove, Fla.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1883; aged 78; died, Dec. 3, 1938, of senility.

James A. Houser, Marion, Ind.; Curtis Physio-Medical Institute, Marion, 1895; aged 75; died, Dec. 5, 1938, of arteriosclerosis and coronary thrombosis.

William Herdie Randall, Williamsport, Pa.; Jefferson Medical College of Philadelphia, 1878; aged 82; died, Nov. 18, 1938, of cardiovascular disease.

John Keyser, Cincinnati; Cincinnati College of Medicine and Surgery, 1893; aged 75; died, Dec. 9, 1938, of myocarditis, arteriosclerosis and uremia.

Stonewall Jackson, Wadsworth, Ala.; Southern Medical College, Atlanta, 1889; aged 76; died, Dec. 13, 1938, of carcinoma of the throat.

John Vinton Cocke, Los Angeles; College of Physicians and Surgeons, Los Angeles, 1911; aged 55; died, Nov. 21, 1938, of chronic hepatitis.

Mark F. Hobson, Wichita, Kan.; Physio-Medical College, Cincinnati, 1879; aged 85; died, Dec. 12, 1938, of influenza and bronchopneumonia.

John Burt Moore, Modesto, Calif.; Medical College of Indiana, Indianapolis, 1886; aged 78; died, Nov. 14, 1938, of chronic arthritis.

William Parker Best, Indianapolis; Eclectic Medical Institute, Cincinnati, 1888; aged 74; died, Dec. 12, 1938, of Parkinson's disease.

D. J. Hunterson, Ravenwood, Mo.; Central Medical College of St. Joseph, 1903; aged 83; died, Dec. 2, 1938, of chronic myocarditis.

N. R. Fitch, Bowling Green, Ky.; Chicago Homeopathic Medical College, 1887; aged 75; died, Nov. 30, 1938, of cerebral hemorrhage.

Alexander A. Smith, Dayton, Ohio; Toledo Medical College, 1903; aged 69; died, Dec. 29, 1938, of coronary occlusion.

William W. Longley, Marianna, Ark. (licensed in Arkansas in 1903); aged 83; died, Dec. 30, 1938, of myocarditis.

Correspondence

THE POTENCY OF DIGITALIS STANDARDIZED ACCORDING TO U. S. P. XI

To the Editor:—There appears to be a growing confusion among physicians and others with regard to the changed relationships in the standardization and dosages of digitalis preparations made according to the requirements of U. S. P. XI as compared with those of U. S. P. X.

All U. S. P. digitalis preparations manufactured prior to June 1, 1936, were standardized according to U. S. P. X. Practically all clinical articles published between 1926 and 1938 are based on the administration of U. S. P. X standardized digitalis. U. S. P. X required all official digitalis preparations to be standardized on frogs by the one hour progressive dose method and to be adjusted to a toxicity of 0.006 cc. (range 0.0055-0.0065 cc.) of tincture per gram of frog or, in everyday language, the equivalent of 600 mg. (range 550-650 mg.) of standard digitalis leaf per kilogram of frog.

Digitalis preparations manufactured and standardized since June 1936 have been standardized according to the requirements of U. S. P. XI.

These requirements are essentially that the preparation shall be standardized by the one hour progressive dose frog method to a toxicity equal to that of a tincture freshly made from the U. S. P. reference standard digitalis powder. This reference powder in some twenty standardizations made personally in this laboratory in the past two and a half years has shown a mean toxicity of 350 mg. per kilogram of frog by the official (U. S. P.) one hour frog method.

What many physicians do not seem to recognize is that the digitalis preparations which they are now using have been standardized according to the requirement of U. S. P. XI and are approximately 70 per cent stronger than were those which they have been accustomed to use for the past ten or twelve years and that the actual dosage of U. S. P. digitalis preparations which they administer to their patients, either for digitalization or for maintenance, must be reduced to at least two thirds of the amount they have been previously accustomed to use. Unless this is done they will encounter frequent instances of digitalis overdosage—nausea, vomiting, excessively slow heart, ventricular extrasystoles, and the like—which will impair the efficiency of the heart.

Although never an official method, considerable standardization of unofficial digitalis preparations has been made in the past with the Hatcher-Brody cat method.

Comparative standardization of official (U. S. P.) frog standardized digitalis preparations, standardized according to U. S. P. X (1926-1936) by the Hatcher-Brody cat method, showed that 1 cc. of a U. S. P. X tincture was approximately equal to 1 Hatcher-Brody cat unit.

Many clinicians thus developed the habit during the last ten to twenty years of transposing cubic centimeters of frog standardized tincture of digitalis directly to cat units and of controlling their dosage to patients in terms of cat units.

But since U. S. P. XI tincture of digitalis is approximately 70 per cent stronger than the U. S. P. X tincture was, the amount of digitalis activity commonly referred to as a cat unit (Hatcher-Brody) is now contained in 0.60-0.65 cc. of a U. S. P. XI standardized tincture or from 60 to 65 mg. (1 grain) of powdered digitalis. Attention to this fact has recently been drawn by Fahr (THE JOURNAL, Dec. 17, 1938, p. 2269, footnote 5).

The situation is further complicated by the fact that both the U. S. P. reference standard powder and the international reference standard powder, on which the U. S. P. powder is based, were standardized by a modified cat method developed by Magnus and Van Wyngaarden which, through the use of artificial respiration and the like, enables the cat to tolerate a very much larger dose of digitalis than is possible by the original Hatcher-Brody method.

Edmunds, Moyer and Shaw (*J. Am. Pharm. A.* **26**:290 [April] 1937), who standardized the U. S. P. XI reference standard powder for the U. S. P. Revision Committee, employed two types of standardization, (1) on frogs by several methods and (2) on cats by the Magnus-Van Wyngaarden method (Knaffl-Lenz, E.: *J. Pharmacol. & Exper. Therap.* **29**:407 [Oct.] 1926. Van Wyngaarden: *Arch. f. exper. Path. u. Pharmakol.* **112**:252; **113**:40, 1926). Edmunds and his associates found a toxicity by the one hour frog method of 391 mg. per kilogram of frog and by the Magnus cat method that 1 cc. of the reference standard tincture was approximately equal to 1 Magnus cat unit.

Failure on the part of clinicians and pharmaceutic manufacturers to keep clear the considerable difference between the amount of digitalis activity represented by the two cat units is responsible for much of the existing confusion.

Another factor in the confusion is that few, if any, of the manufacturers of unofficial digitalis preparations (which are not legally required to be standardized by the U. S. P. frog method) use either the original Hatcher method or the later Magnus method but have adopted a modification of their own.

The approximate relationships which exist between the various units may, therefore, be summarized as follows:

1 U. S. P. XI digitalis unit
= 0.1 Gm. U. S. P. XI digitalis powder
= 1.0 cc. U. S. P. XI tincture of digitalis
= 0.17 Gm. U. S. P. X digitalis powder
= 1.7 cc. U. S. P. X tincture of digitalis
= 1.7 cat units, if determined by the Hatcher method, the widely known, clinically used cat unit.
= 1.0 cat unit, if determined by the Magnus method, the little known international (League of Nations) cat unit.

HAROLD N. WRIGHT, PH.D., Minneapolis.
Assistant Professor of Pharmacology, University of Minnesota Medical School.

To the Editor:—In footnote 5 of a recent article in THE JOURNAL, page 2269, I state: "At present digitalis is standardized according to the U. S. P. XI so that 0.65 cc. of the tincture or 0.065 Gm. (1 grain) of the powdered leaf is [equivalent to] 1 Hatcher-Brody cat unit. In the previous editions of the U. S. Pharmacopeia, 1 cc. of tincture or 0.1 Gm. of the powdered leaf contained 1 cat unit. One-tenth Gm. (1½ grains) of the standard U. S. P. XI powder is equivalent to 1.6 Hatcher-Brody cat unit." This statement has occasioned considerable confusion among both physicians and pharmacologists, as attested by letters which I have received after publication of this paper. The statement, therefore, needs some clarification.

I know of a number of cases of digitalis overdosage resulting from the fact that the attending physician prescribed digitalis that had been standardized in accordance with the directions of the U. S. P. XI as if the drug had the same potency as digitalis standardized according to the directions of the U. S. P. X. Most interesting of all is the fact that one pharmacologist overdigitalized himself with a U. S. P. XI preparation, not knowing that he was using a digitalis from 50 to 60 per cent more powerful than the U. S. P. X digitalis which he had been using for years. I am sure that many physicians have been spared overdigitalizing their patients because few pharmaceutic houses are as yet putting out digitalis standardized according to the U. S. P. XI. Most pharmaceutic houses are still putting out digitalis standardized according to the U. S. P. X. It is therefore imperative that physicians be warned that there are now two kinds of digitalis available in the drugstores. Most of it is standardized according to the U. S. P. X, in which case approximately 100 mg. (1½ grains) of powdered leaf to

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10 pounds of body weight will accomplish nearly complete digitalization if given over a short period of time, i. e. from twenty-four to forty-eight hours. There are at the same time other preparations standardized according to the U. S. P. XI. The latter preparations have a potency such that 65 mg. (1 grain) of powdered leaf to 10 pounds of body weight will accomplish nearly complete digitalization.

The tenth Pharmacopeia of the United States gives the following directions for standardizing digitalis. "Digitalis, in the form of tincture, properly diluted and injected into the ventral lymph sac of a frog, has a minimum systolic dose (the minimum dose producing in one hour a stoppage of the ventricle of the heart in systole) not exceeding 0.006 cc. of tincture . . . for each gram of body weight of frog." The XI Pharmacopeia prescribes the following: "The potency of digitalis shall be such that 0.1 Gm. of it when assayed as directed shall possess an activity equivalent to not less than 1 U. S. P. digitalis unit." In order to compare the potency of the two preparations it is necessary only to learn what is meant by 1 U. S. P. digitalis unit.

In 1936 it was determined that a new standard for digitalis preparations was to be set up in conformity with the international or League of Nations digitalis standard. A so-called reference powder was then made up, and this reference powder is given to any authorized person who wishes to standardize digitalis preparations. Edmunds (*J. Am. Pharm. A.* **26**:290 [April] 1937) has standardized the U. S. P. XI reference powder, using two methods. Using the so-called one hour frog method, he finds that 0.000391 Gm. of the powdered leaf per gram of frog stops the heart in systole in one hour. Making use of the Magnus cat method, he finds that 1 cc. of the standard reference tincture equals approximately 1 Magnus cat unit. It is now clear that the U. S. P. XI standard reference powder has such a potency that 0.000391 Gm. per gram of frog stops the heart within one hour, whereas U. S. P. X required that 0.0006 Gm. of digitalis per gram of frog stop the heart in one hour. In other words, the potency of the U. S. P. X official digitalis is 65 per cent of that of the U. S. P. XI.

Many observers had noted that the U. S. P. X digitalis had a standardization value of 100 mg. equivalent to 1 original Hatcher-Brody cat unit. It is therefore desirable to know the relationship between the Hatcher-Brody and the Magnus or international cat unit. Approximately 1.6 Hatcher-Brody units equals 1 Magnus cat unit. Again we see that, standardized on cats, the digitalis prescribed by the tenth Pharmacopeia is 63 per cent as strong as the digitalis prescribed by the eleventh Pharmacopeia.

For the practicing physician, this means that in cases in which he had been using or is using 100 mg. (1½ grains) of digitalis leaf or 1 cc. of tincture standardized according to the tenth Pharmacopeia, he should prescribe 0.065 Gm. (1 grain) of powdered leaf or 0.65 cc. of tincture when using a digitalis preparation standardized according to the U. S. P. XI.

GEORGE FAHR, M.D., Minneapolis.
University of Minnesota Medical School.

To the Editor:—The confusion concerning digitalis standardization is illustrated by a comparison of the opinions of two eminent authorities printed within a period of three weeks in THE JOURNAL.

On Dec. 17, 1938, in "The Treatment of Cardiac Irregularities," George Fahr (page 2269, footnote 5) states: "At present digitalis is standardized according to the U. S. P. XI so that 0.65 cc. of the tincture or 0.065 Gm. (1 grain) of the powdered leaf is 1 Hatcher-Brody cat unit. In the previous editions of the U. S. Pharmacopeia 1 cc. of tincture or 0.1 Gm. of the powdered leaf contained 1 cat unit. One-tenth gram (1½ grains) of the standard U. S. P. XI powder is equivalent to 1.6 Hatcher-Brody cat unit."

On January 7, in "Drug Therapy in Coronary Disease" Harry Gold (page 5) states: "A satisfactory dosage in the average case of auricular fibrillation or heart failure in coronary thrombosis is about 6 grains or 0.4 Gm. (4 cat units) of digitalis leaf daily for three days. . . ." This implies that powdered digitalis assays 1½ grains to the cat unit.

The U. S. Pharmacopeia, pages 397-398, makes no mention whatever of standardization of digitalis by the Hatcher-Brody or any other cat unit method. Supposedly digitalis is assayed by the frog method, the U. S. P. reference digitalis powder (U. S. P., p. 485) being used as a standard. Reference powder is supposedly equivalent to the international standard digitalis powder, of which 0.1 Gm. is 1 international digitalis unit. That this ideal is not accomplished in practice is evident from the studies of Edmunds, Moyer and Shaw (*J. Am. Pharm. A.* **26**:290 [April] 1937) and Rowe and Pfeifle (ibid. **27**:182 [March] 1938). After having investigated many commercial products, these authors have arrived at quite different conclusions concerning the comparative potency of the commercial preparations, the U. S. Pharmacopeial standard and the international standard powder. The latter authors conclude that the U. S. P. XI standard is 150 per cent of the U. S. P. X potency and 125 per cent of the international standard potency. The various digitalis products on the market seem to differ widely from one another as well as from the reference standards.

It seems evident that the problem is worthy of thorough elucidation, particularly since there seems to be no reference to the subject in the recent medical literature. Whatever data are available were found in the pharmacy publications.

Until the standard of potency is more satisfactorily established, it seems quite clear that the clinician must depend on presumably equal potency of the same manufacturer's product. So wide a variation in potency as 35 per cent between different preparations makes it urgent that each patient be advised to continue the use of a certain brand of digitalis throughout the period of therapy. Even preparations dispensed in cat unit dosage are not interchangeable, since cat unit values have been found to be duplicable only in the hands of the same assayer, if at all.

LEON LEWIS, M.D., Newark, N. J.

INVESTIGATIONS ON ANTIBODIES

To the Editor:—What does the writer of the editorial mean when he says in "Recent Investigations on Antibodies" (THE JOURNAL, February 25, p. 735): "The investigators, however, have for the first time applied quantitative immunochemical technics to the problem of splenic immunity." Does he not consider the technics of Hektoen and Carlson quantitative or my work, using such methods, qualitative? Has he seen my "A Study of the Origin of the Immune Bodies by the Method of Organ Transplantation" (*Proc. Soc. Exper. Biol. & Med.* **7**:122-124, 1910)? Or, more to the point, because more physiologic, has the writer of the editorial read the work (confirmed later by Preston Kyes using intermediate dilutions) entitled "The Relation of the Spleen to the Fixation of Antigens and the Production of Immune Bodies" by Luckhardt and Becht, *Am. J. Physiol.* **28**:257-274 [Aug. 1] 1911)?

In these papers the spleen is shown to be related specifically with the formation of immune bodies (antigen used: goat's corpuscles for hemolysins, hemagglutinins and hemopsonins; rat's corpuscles for hemagglutinins and hemopsonins) but not exclusively so, since "asplenic dogs do not produce hemolysins, hemagglutinins or hemopsonins (*a*) as rapidly nor (*b*) in as high a concentration as the corresponding control dogs." Since even asplenic dogs showed an immunity curve why make the statement "Possibly these investigations will lead to the recrudescence of interest in the supposedly obsolete hypothesis which pictured the spleen as the sole source of specific antibodies." One would have to go back pretty far and brush aside a good

deal of evidence as inconsequential to find some one defending the hypothesis that the spleen was the "sole source of specific antibodies."

Some of the drug action referred to in this editorial can be readily explained on the basis of present day knowledge of splenic function. I would not say that it was all due to constriction and diltation of the spleen, but with the available evidence I would be inclined to think so and would mention this possibility rather than write that it was due to the "therapeutic stimulation of the parasympathetic." As a matter of fact, if the writer of the editorial and the investigators quoted had read the brief article in the *American Journal of Physiology*, Proceedings of the American Physiological Society, Baltimore, March 30, 31, April 1 and 2, 1938, pages 159-160, by Laurence L. Palitz (now in preparation for complete publication), the interpretations in my mind would certainly have occurred to them. As a matter of fact, a previously published abstract (*Am. J. Physiol.* **116**:118 [June] 1936) would have suggested it. With these data in mind the writer would, I believe, have written the editorial entirely differently. At present it has a flavor of occultism.

ARNO B. LUCKHARDT, M.D., Chicago.
Department of Physiology, University of Chicago.

SULFAPYRIDINE IN PNEUMONIA

To the Editor:—We have read with interest the instructive article on the treatment of pneumonia with sulfapyridine by Dr. Harrison F. Flippin and his associates (THE JOURNAL, February 11, p. 529).

The wide variation in free blood sulfapyridine observed by Flippin may be accounted for on one or more of at least three grounds: (*a*) variability in the time at which blood samples were taken in relation to drug dosage, (*b*) coincidental renal impairment of function and (*c*) individual variability in conjugation of the drug in the blood stream.

In December 1938 certain experiments were performed in our laboratories at Cold Spring Harbor which showed clearly the extreme variability in man of conjugation of sulfapyridine, especially as it appears in the urine eighteen hours after the administration of a single 3 Gm. dose by mouth. Superficially there appeared no explanation for this result, since both subjects were normal men. One of us (D. A. B.) suggested, however, that the result might conceivably be due to differences in the basal metabolic rate; it was found on investigation that this hypothesis fitted the facts. The man in whom maximum conjugation occurred has a basal metabolic rate of + 30, the man in whom the least conjugation occurred having a subnormal basal metabolic rate. In these men the one with the higher metabolic rate excreted approximately 90 per cent of the material in conjugated form, whereas the one with the low metabolic rate excreted approximately 50 per cent of the material in conjugated form.

One of us (D. R. C.) then carried out an experiment at Cold Spring Harbor to determine whether or not this apparent effect of the metabolic rate could be confirmed in small animals. Nine rabbits were divided into three groups. The first of these groups (three rabbits) received a dose of 2,000 mg. per kilogram of the free acid in acacia suspension. The second group (three rabbits) received 2,000 mg. per kilogram of the free acid in acacia suspension after a preliminary intramuscular injection of 20 mg. per kilogram of sodium dinitrophenol. The third group (three rabbits) received 2,000 mg. per kilogram of the free acid in acacia suspension after the intravenous administration of an anesthetic dose of evipal soluble. The first group showed the usual blood concentration curves. The second group showed a hyperpyrexia and a significant increase in the ratio of conjugated to total sulfapyridine in the peripheral circulation. The third group did not show any significant change from normal.

We believe that this sheds some light on the apparent discrepancies between the blood levels and the therapeutic effectiveness. Further observations by clinicians and those to be published from our own laboratories will undoubtedly clarify the matter.

THE CALCO CHEMICAL COMPANY, INC.
DAVID A. BRYCE, M.D.
DAIVD R. CLIMENKO, M.D., PH.D.
Bound Brook, N. J.

WRITING PRESCRIPTIONS FOR NARCOTICS

To the Editor:—As a subscriber to THE JOURNAL, I should like to call attention to a matter which is causing me and many other careful pharmacists, I know, many a "headache." That is the careless way in which most physicians write prescriptions for narcotics. There is scarcely a prescription offered for compounding in my prescription department that is 100 per cent properly written. Most of them fail in at least two or three points. The name is often not properly written, the age is seldom given, and the physician's signature is often not properly signed.

To me this is an important point in the writing of narcotic prescriptions, and I believe that you would confer an important favor to both physicians and pharmacists by calling attention to this matter.

Following is the text of a circular issued by the Kings County Pharmaceutical Society:

NARCOTIC PRESCRIPTION REGULATIONS

1—Must be written in ink or indelible lead.
2—The full signature of the physician, as well as address and registry number, are required.
3—Name, address and age of patient (child, adult, etc., is not sufficient).
4—If the amount of narcotic prescribed is for an unusual quantity the disease must be indicated, or the following designations may be used; Article 117, Exemption 1 (meaning for an incurable disease), or Article 117, Exemption 2 (meaning for an infirm patient).
5—The pharmacist may supply the physician with one ounce of an aqueous solution of a narcotic, not over 10% strength, for his office use, provided the order is written on an official federal order blank.
6—The pharmacist may renew a prescription containing the exempt quantities of a narcotic, which are as follows: not more than 2 grains of Opium, 1 grain of Codeine, and ¼ grain of Morphine to the ounce.
7—A prescription for narcotics cannot be renewed on a physician's order to "Renew," nor can a telephone order be accepted. A new prescription must always be written.

Both the physician and the pharmacist are liable for any violation of the above mentioned rules.

For the protection of the patient, as well as the doctor and the pharmacist, we would suggest that the age of the patient be stated on all prescriptions, whether or not for narcotics. Also that the directions be written on every prescription whether for internal or external use.

U. S. P. and N. F. Committee of
The Kings County Pharmaceutical Society
Brooklyn, N. Y.

J. O. E. NEVEN, Brooklyn.

PERIPHERAL VASCULAR DISEASE

To the Editor:—In THE JOURNAL January 21, page 230, Ochsner and DeBakey discuss "The Rational Consideration of Peripheral Vascular Disease." This is an excellent study but should include the use of roentgen rays in the treatment of vasospastic conditions such as Raynaud's disease. According to some observers this method is of doubtful value, but according to others the same may be said of some of the methods described in this article. Those who have had greater experience in the use of roentgen rays for circulatory disturbances consider this a valuable modality in thrombo-angiitis obliterans particularly, and also in Raynaud's disease. A paper as exhaustive as this one, in my opinion, should have included a discussion of this form of treatment.

ABRAHAM S. ROTHBERG, M.D., New York.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

FURUNCULOSIS IN SHEET METAL WORKERS

To the Editor:—A white man aged 46, a sheet metal worker, has suffered from furunculosis since Sept. 18, 1938. For the most part, the location of the furuncles has been limited to the upper extremities and the axillary regions. In addition a widespread eczematoid dermatitis developed following the use of Neko soap. The latter condition has proved troublesome, since the skin is now sensitive to many of the topical applications I had been using in the local treatment of the furuncles. The usual response to these applications is that of vesiculation. Among the chief offenders in this respect are ointments or solutions containing mercury, phenol and magnesium sulfate. The patient's general physical condition is good, and outside of the conditions mentioned and a moderate hypotension there is nothing to note. Repeated examinations of the urine have been negative. The white blood cell count is slightly elevated but never has been higher than 14,000. The hemoglobin and the red blood cell count are within normal limits. The Kahn reaction is negative. In addition to the local treatment, which consisted of incision and drainage when indicated, the use of boric acid compresses and magnesium sulfate compresses and various ointments, the patient has been given adequate amounts of cod liver oil, dicalcium phosphate, iron and copper, and vitamin B. About twenty injections of furunculosis vaccine have been given thus far, according to the usual plan. Tinpronate-Searle (metallic tin organically combined with a digestible protein base) was also tried but seemed to aggravate rather than benefit the condition. Kindly suggest treatment.

M.D., Illinois.

ANSWER.—Metal workers may be exposed to a variety of cutaneous irritants such as volatile solvents, antimony, arsenic, chromium, lime, soldering compounds, petroleum oil and grease. This query illustrates the difficulty encountered in offering advice about any industrial medical problem without precise knowledge of the materials or processes involved.

Furunculosis usually can be traced to petroleum oils, grease and tar, the sites of predilection being the arms and legs. Axillary involvement, therefore, is probably not of industrial origin unless it occurred by spread or secondary infection from the arms.

The exact composition of Neko soap is not known, but antiseptic soaps often contain mercury, phenols and benzoates, in themselves possible sources of dermatitis.

In addition to urinalysis, determinations of the blood sugar should be made, and if high levels are recorded appropriate treatment should be instituted. Local treatment should include incision and drainage together with the application of an antiseptic in proper dilution which has been found nonirritating by preliminary patch tests. A 2 per cent solution of formaldehyde or a 1 per cent solution of sodium benzoate may be useful. Autogenous vaccines are preferable.

If the patient does not respond to the treatments suggested, ultraviolet rays obtained from an alpine sun lamp or x-rays may be tried. Other methods of treatment suggested are: colloidal manganese, recommended by Gardiner; injections of 15 per cent rectified turpentine and 5 per cent ethyl aminobenzoate and quinine hydrochloride in olive oil, recommended by Levine and Rose, and autohemotherapy consisting of 10 cc. of venous blood intramuscularly, recommended by Nicolas, Gaté and Dupasquier.

CALCIUM AND VITAMIN D IN DIET

To the Editor:—A child about 3 years old showed improvement as a result of calcium therapy given concurrently with vitamin D preparations. Are there any indications for stopping the use of calcium while improvement in general health continues?

M.D., New Jersey.

ANSWER.—As the amounts of vitamin D and of calcium prescribed for the child are not stated and the indication for prescribing these substances have also been omitted, a specific answer to the question is not possible.

Calcium requirements for children have been investigated by Sherman (Chemistry of Foods and Nutrition, New York, Macmillan Company, 1927, p. 311. Sherman, H. C., and Hawley, E.: Calcium and Phosphorus Metabolism in Childhood, *J. Biol. Chem.* **53**:375 [Aug.] 1922) and his results have been confirmed by others. Any child who is not allergic to milk should be able to ingest in his daily diet all the calcium that is needed to maintain health or to restore deficiencies in the bones or other parts of the organism. However, it is frequently difficult to supply adequate amounts of vitamin D unless vitamin D supplements are used. The dosage of vitamin D should be limited to a reasonable therapeutic or prophylactic requirement. It is possible to create a toxic state from chronic overdosage of either calcium or vitamin D, and hypervitaminosis D is becoming recognized as a true clinical entity. Overdosage from calcium salts taken by mouth may produce gastrointestinal irritation evidenced by gastric distress, nausea, vomiting and diarrhea. The real dangers of calcium overdosage are those which result from prolonged hypercalcemia and these include a disturbance of conduction in the heart, ventricular fibrillation and tachycardia and, if serum calcium concentration is maintained at about 15 mg. per hundred cubic centimeters in experimental animals, fatal results may be produced. (Cantarow, Abraham: Calcium Metabolism and Calcium Therapy, Philadelphia, Lea & Febiger, 1931, pp. 135-137). Joseph Goisman and Edward L. Compere (The Healing of Fractures of Atrophic Bones, *J. Bone & Joint Surg.* **20**: 587 [July] 1938) found that fractures of bones in either young or old rats on mineral-deficient diets did not heal more promptly or more adequately when large amounts of vitamin D, of calcium or of both substances were added to the basic diets than did those in rats which had been on a normal basic diet previous to fracture; in some instances these supplements seemed to retard bone repair.

CONGENITAL VARICOSITIES OF LEG

To the Editor:—An obese woman aged 28 was born with an extreme varicose condition of the entire right leg up to her waist. Please give me the name of the best knit hose for her to wear and the company which makes them. The elastic hose that she has worn has been unsatisfactory. Would it be safe to operate on such an extensive involvement of veins?

M.D., Oklahoma.

ANSWER.—The description does not mention any change in the size or temperature of the affected right limb as compared with the other. However, it seems that this is a congenital vascular anomaly, which usually consists of multiple arteriovenous communications, although occasionally a diffuse hemiangioma may be present.

An elastic stocking made to order and reaching all the way to the groin may be obtained through any one of the surgical supply houses in larger cities. It may give some protection and subjective relief. However, an effort should be made to stop the progress of this vascular anomaly by surgical methods. This involves operations in multiple stages and should be undertaken only by men experienced in this type of surgery. Some of these patients, unless actively treated, develop an elephantiasis or because of the gradually diminishing circulation to the toes show gangrenous patches. If an arteriovenous communication is present, this may throw an increased load on the heart so that cardiac dilatation and even failure may result.

LOCALIZED MELANOSIS AFTER IRRITATION

To the Editor:—A boy 15 years old has several areas on the face about 1.5 cm. in diameter which seem permanently discolored. This is the result of a practical joke last summer when at camp some other lads daubed his face with strong iodine. The areas are stained a dark brown and do not seem to fade. Is there any escharotic paste that could safely be used in the attempt to remove these blemishes, or what could you suggest?

M.D., New York.

ANSWER.—A stain remaining for months after the application of tincture of iodine is due to increased production of melanin, iron free skin pigment, as a response to the irritation. Persons whose skin produces pigment readily are apt to have such mementos of various kinds of irritation. They occur frequently after the use of mustard plasters. During the relatively slight exposure to light during the winter months they will fade just as freckles do. If it is desirable to hasten this process, the time honored freckle lotion containing one part of mercury bichloride in 500 parts of 50 per cent alcohol may be dabbed on several times a day until an inflammatory reaction results, when the treatment is stopped and exfoliation awaited, which is expected to produce a blanching. From 5 to 20 per cent lactic acid in water may be used in the same way; but this is painted on at longer intervals, with care to cover only the pigmented spot. Well adapted to small areas such as those described is the application of carbon dioxide snow for a few seconds under light pressure. Five seconds, even less in some cases, causes an exfoliation and this is the most easily controlled method, giving the quickest results. One application is made and the result awaited. If not sufficient to produce a reaction, a stronger application can be made a few days later.

A warning goes with advice such as this. There is always a risk that the irritation intended to remove the pigment will have the same result as that which caused it to occur.

DETERIORATION OF MILD PROTEIN SILVER AND STRONG PROTEIN SILVER

To the Editor:—In THE JOURNAL, Oct. 8, 1938, page 1466, in a special article by Henry W. E. Walther on local urinary antiseptics under the discussion of silver preparations occurs the statement "all these solutions should be made freshly every day or two, since they deteriorate on standing, and they should be kept in amber colored bottles." Beckman, in Treatment in General Practice, in writing on the treatment of gonorrhea states "It is popularly believed that they [strong protein silver and mild protein silver] both deteriorate rapidly. That this is not true has recently been shown by Pilcher and Sollmann (1924), who found that (*a*) strong protein silver solutions become poorer in ionic silver and therefore less efficient, but not sufficiently so to become of much clinical importance even in one year. (*b*) Mild protein silver on the contrary becomes richer in silver ions, and therefore more antiseptic but also more irritant. The changes in mild protein silver solutions start rapidly, so that a week might modify the clinical response." How do you reconcile this difference of opinion among authorities? Who is right?

J. A. MILLSPAUGH, M.D., San Pedro, Calif.

ANSWER.—The difference of opinion arises probably from the use of different criteria. Those of Pilcher and Sollmann were based on the checking of yeast fermentation, while those of Walther were based on clinical traditions, which it would be difficult to substantiate objectively. However, there is no serious disagreement between the two statements as to mild protein silver: This may become irritant inside of a week and progressively more so with time. The difference in the statements as to strong protein silver solution is greater, but it would be difficult to judge decrease of antiseptic action clinically. Perhaps the "caution" is based largely on the possibility of bacterial or mold infection of the solution with standing. Exposure to light might also reduce the ionized silver to inactive forms.

CORNEAL GRAFTS

To the Editor:—Please advise whether there is a well authenticated case of transplantation of the cornea in which there was any vision two or three months following operation.

A. L. COYLE, M.D., Pittsburgh.

ANSWER.—There have been well authenticated cases in which a disk, comprising the full thickness of the cornea, was transplanted with good vision for from three months to periods of more than one year after operation. Publications by Castroviejo of New York, Filatov of Philadelphia and Elschnig of Prague, list many such cases. Transplantations of the whole cornea, however, have not been successful and any form of transplantation is apt to be successful only when the entire cornea is opaque. Apparently a portion of the clear cornea at the periphery is necessary for the persistence of a clear corneal graft.

TUBERCULOUS OSTEOMYELITIS OF STERNUM

To the Editor:—About one year ago a friend of mine returned from a neighboring country where he had undergone a surgical operation consisting in the incision of an abscess, located in the anterior chest wall at the junction of the plate and process of the sternum. I found histologic as well as bacteriologic evidence of the tuberculous etiology of the lesion. The roentgenograms showed a zone of rarefaction in the region mentioned. Thereupon I indicated a treatment with iodized oil, recalcification, heliotherapy and cleansing of the wound surface. The wound, which at that time measured about 1 inch in diameter and presented some discharge, closed following this treatment and cicatrized completely after seven months. Contrary to my advice, the patient took strenuous exercises with the upper extremities, whereupon the wound reopened to an extent of 3 mm. in diameter, with slight suppuration, closing sometimes and reopening again. In despair he asks me to remove the bone focus. As my experience is contrary to such a measure, I would appreciate your opinion.

JOSE PEREZ LORIE, M.D., Habana, Cuba.

ANSWER.—In tuberculosis of the bone in which secondary infection has not occurred, every effort should be made to secure healing by medicinal management without drainage of accumulated pus. Once an abscess has been drained, secondary infection is almost certain to occur. This complicates the picture seriously, converting the tuberculous osteomyelitis into a mixed infection osteomyelitis. In such cases, especially in the ribs and sternum, it is necessary to excise the affected bone, pack the wound with antiseptic gauze and permit it to heal by granulation.

In the case under consideration it is likely that surgical excision will eventually be necessary. In this sort of lesion, recent communications have reported success from instillations of cod liver oil. It might be well to try this treatment for several months before resorting to surgery.

Osteomyelitis of the sternum is likely to be a difficult condition to treat surgically. Being cancellous bone, it presents the same problems as does osteomyelitis of the skull. After one has apparently excised all infected tissue, the infection may spread in the cut surface of the bone, necessitating repeated operations and wider and wider excisions. For this reason it is advisable to be radical at the first operation, to remove the bone well beyond the infected area, to treat the cut bone edges with bismuth iodoform paste and in the postoperative period, until the wound is well healed, to keep it thoroughly irrigated with diluted solution of sodium hypochlorite. In several cases of this kind in which the infection continued to extend, the maggot treatment has been used with some success. Wide excision of bone and thorough antisepsis during the postoperative period are important factors in the surgical treatment.

TRIGEMINAL NEURALGIA

To the Editor:—A white man aged 50 weighing 240 pounds (109 Kg.) has been suffering from a trifacial neuritis for the past three years. These areas are especially painful to touch so that even washing the face is a painful task. I have used every method possible to find a focus of infection. His sinuses and teeth are negative to x-ray examination but even so I have had him have the extraction of several suspicious teeth with an apparent slight temporary relief. I have given him every medication possible, including salicylates, cinchophen and Oxo-ate-B. I have used all types of physical therapy, including short wave diathermy. Triethylchloride has been given as inhalations for pain, but the only partial relief he gets is with soluble phenobarbital 1½ grains (0.1 Gm.) by mouth. Will you please suggest a cause, some means of diagnosis and a treatment, as the only other treatment I can think of is the injection of the ganglion.

M.D., Louisiana.

ANSWER.—According to the diagram sent by the inquirer the patient suffers from pain in the area of distribution of the ophthalmic and maxillary divisions of the right trigeminal nerve. Because the pain does not cross the midline to the left side of the face, because of the initiation of pain by cutaneous stimulation and because foci of infection are not present about the head, the diagnosis of major trigeminal neuralgia (tic douloureux) is probably accurate. It is not mentioned whether or not there are discrete dolorogenic zones which set up the pain when stimulated by touching or washing the face, nor is it stated whether there are signs of other cranial nerve involvement which would suggest the presence of a lesion of the paratrigeminal area. The cause of trigeminal neuralgia is generally conceded to be unknown. Permanently successful treatment consists of section of the trigeminal root proximal to the gasserian ganglion, by way of a subtemporal, extradural approach. Alcohol injections offer uncertain and at the best only temporary relief from the pain of trigeminal neuralgia.

EXTREME LORDOSIS AND DELIVERY

To the Editor:—What is the prospect of a normal delivery for a primipara aged 23 with a normal pelvic measurement but whose pelvis is tilted backward with an extreme lumbar lordosis and whose right thigh cannot be abducted or flexed at all?

M.D., Illinois.

ANSWER.—An accurate answer cannot be given from the information at hand. Lumbar lordosis, depending on the degree, may cause changes in the pelvis resulting in increased pelvic inclination. If the diseased vertebrae are the lowest lumbar, the inlet of the pelvis may be roofed over by the spinal column and the head cannot enter the inlet. A decision can be reached only after thorough x-ray study. Preparation for the delivery should include hospitalization. It is possible that a test of labor will be advisable. All plans should visualize a possible delivery by cesarean section.

THUMPING IN EARS

To the Editor:—When I lie down in bed I can hear as my heart beats a constant regular thumping in both ears and can easily count the number of heart beats per minute by this. It is quite disturbing to me. I can find nothing in my literature relative to this condition.

M.D., Kentucky.

ANSWER.—In the absence of any organic disease such as hypertension, valvular cardiac disease or hyperthyroidism, the awareness of the heart on lying down in a quiet room is of no great significance. It occurs in many normal persons, especially those who are of the so-called nervous disposition.

ANTERIOR PITUITARY-LIKE SUBSTANCE AND HEART

To the Editor:—Could the administration of antuitrin-S to a boy of 10 years (adiposogenital dystrophy) have any possible deleterious effect on the heart?

M.D., Idaho.

ANSWER.—No investigative work has been found in the literature concerning the influence of anterior pituitary-like substance on the heart, and no deleterious effect on the heart even when large doses have been continued for as long as a year have been noted. It would appear that if reasonable dosage is administered no harmful effects on the heart will result.

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Council on Medical Education and Hospitals

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Thirty-Fifth Annual Meeting, held in Chicago, Feb. 13 and 14, 1939

(Continued from page 1098)

DR. FRED MOORE, Des Moines, Iowa, in the Chair

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FEBRUARY 13—AFTERNOON

SYMPOSIUM ON THE SMALL HOSPITAL

The Community Hospital

MR. BARRY C. SMITH, New York: This paper will be published in full in THE JOURNAL.

The Small Hospital: Organization and Management

DR. MALCOLM T. MACEACHERN, Chicago: In the present discussion I shall mean by the small hospital one which cannot, for various reasons, supply within itself complete diagnostic and therapeutic facilities. Usually its bed capacity is less than fifty, but under some circumstances a hospital of seventy-five or a hundred beds may justly be placed in the small hospital class. Not many governmentally owned hospitals fall into this class. Occasionally a community may through its organized government build and maintain such a hospital, but usually the small hospital is owned and operated by a church, a fraternal order or the community through some organization other than the community government and is spoken of as a voluntary hospital. Such institutions constitute a large percentage of all hospitals.

Good organization is as essential in a small hospital as in a large hospital. Many elements are involved, and the end result sought is the complete and efficient care of the patient. Only through good organization can the hospital fulfil its functions in the community. A constitution and by-laws will define the purposes of the institution, specify its government and state in general terms the means by which it is to be maintained and operated.

Every hospital must have a governing board which is directly responsible for its operation. Whether the members are designated as trustees, directors, governors, supervisors, commissioners or members of a hospital trust, their duties and responsibilities are the same. Regardless of the size of the hospital, they represent the community in the management of the institution. They are therefore responsible for seeing that the hospital renders the best possible service to the sick at the least cost consistent with efficiency. They determine the policies of the institution with relation to community needs, direct the administrative personnel of the hospital and provide adequate financing. The governors cannot personally perform their many duties but must delegate practically all the actual work to others.

The first concern of the governing board in thus delegating responsibility is to secure adequate medical care for the patients, and this is done by appointment of a medical staff. In the small community it may be impossible to secure physicians who are qualified to treat all types of disease, and herein lies one of the limitations of the small hospital. It should limit its voluntary admissions to patients with types of disease which the members of its medical staff are qualified to treat. In an emergency it may be forced to admit others, but if possible these should be given only temporary care and whenever practical outside assistance should be secured.

It is also necessary to build up an organized personnel who will carry out the orders of the medical staff. This personnel will consist of nurses, dietitians, technicians and various others. It may not be sound policy to employ separate persons to perform each of the functions implied; it is usually necessary to find persons who are qualified to perform several functions. The small hospital is rarely justified in employing a purchasing agent and storekeeper, yet there must be control of both purchase and issue. Usually the director controls purchasing and places some reliable employee in charge of stores. Accounting demands a trained accountant, but often this person will also act as telephone operator and information clerk and possibly perform other duties. Controlling all this organization is a director, or superintendent, responsible directly and solely to the governing board. This officer is not, as in the larger hospital, purely an administrator but will perform many duties which in the larger institution are delegated to subordinates. The governing board is composed largely of persons who are not medically trained and hence are not qualified to interpret properly the professional results. It must rely on medical assistance, and for this purpose it is usual to appoint a joint advisory committee.

The governing board varies from two or three to an indefinite number of members. Most careful consideration should be given to their selection. Only persons who are actually interested and are both able and willing to devote their talents and sufficient time to the work of the hospital in its community endeavors should be given the honor and privilege of membership. The various interests in the community should be represented, such as business, women's clubs, church and fraternal organizations and, if the community is an industrial one, organized labor. If the hospital is a recipient of tax funds, there should be a representative of the governmental agency which is directly responsible to the taxpayer. Professional interests should be represented also, but many authorities regard it as inadvisable to have a physician in active practice as a member of this body. In some instances a physician is elected by the local medical society or by the medical staff of the hospital, but even then he sometimes assumes an unwarranted attitude of authority in the management of the hospital. Occasionally there is a tendency on the part of the medical representative to express his personal judgment in matters which come before the board rather than the collective or group opinion of the body he represents. It is believed by some hospital bodies which desire the medical point of view represented on the governing board that it is best to appoint a physician who has retired from active practice but who keeps abreast of the advances of modern medicine.

The method of selection will vary with the ownership, but in every case it should be provided that those appointed to the governing board may perform their duties without undue influence from any outside source. When the hospital is owned and operated by the community through its governmental agency it is undesirable to have that agency directly operate the institution. The man who enters politics incurs obligations which he cannot ignore, and the result in the hospital is too often incompetence or inefficiency. In an institution in which human life and alleviation of suffering are at stake, no degree of incompetence or inefficiency can be tolerated. If the hospital is owned and operated by the community through a joint stock company incorporated not for profit or through any other form of community organization, the members of this organization will elect the governing board of the hospital. The same is true of hospitals owned by church or fraternal organizations.

The organization of the governing board in a small hospital differs in no essential from that found in the large institution. Officers should consist of a president, a vice president, a secretary and a treasurer. These are elected by the governing body and perform the duties which are accepted as pertaining to the several offices. All committees report directly to the governing board.

The qualifications of the director of the hospital as stated by the American College of Hospital Administrators are applicable in their entirety to the director of the small hospital, but the person who is responsible for the management of the small hospital must be a much more versatile person than the one who is in charge of the larger institution, and the smaller the hospital the greater is the necessity for versatility. He must be able to fill any position and to do any piece of work, from firing the boilers in an emergency to performing the actual administrative duties of his or her own office.

The director, sometimes called the superintendent or administrator, is usually a woman and in all but a small percentage

of cases one who has had a basic training as a nurse. One reason for this is that the small hospital is not able to offer a salary that is attractive to a man, but of even greater importance are the duties involved. Of these, the chief is in the nursing department. The small hospital which does not conduct a school of nursing does not require a superintendent of nurses as a separate person. This is a position which is usually filled by the director in addition to her general administrative duties, and it is a position that cannot be filled satisfactorily by a man. The director has a varied relationship. She is, first, the representative of the governing board. The relationship to the medical staff is difficult to explain. In any institution there can be only one head, yet the nurse is always accustomed to take orders from the physician and to obey them without question. This is as it should be when the orders concern the treatment of patients. There is, however, a relationship in which the physician must submit to orders from the director, even though she is a nurse trained in all the customary relationships of nurse and physician. As an administrator, she should not be handicapped by the traditional relationship to the physician. In administrative matters she must give orders and they must be accepted without question by the physician. This dual relationship is perhaps more noticeable in her dealings with the radiologist and the pathologist than with other members of the medical staff. The administration must require the departments of these men to cooperate in making accounting possible. Equipment and supplies are usually purchased through the hospital, and the salaries of technicians and others are a part of the hospital pay roll. The heads of these departments are, however, physicians, and the director must not interfere with their professional activities. She is responsible for knowing whether the results are satisfactory, and this information is obtained through the medical staff. On the other hand, there are many administrative contacts, and in those the director is in the position of authority.

It is as important in the small hospital as in the large hospital to have a woman's auxiliary, because of the valuable assistance, financial and otherwise, that such an organization will render at all times. The small hospital can readily have an organized medical staff. Experience has proved that organized effort in conducting the medical work is absolutely essential, regardless of how limited a number of physicians may be privileged to practice in the hospital. Where there are only three or four physicians, the medical staff may exist in its simplest form, an undifferentiated group. Provision is made for the periodic election of officers, who function in an executive capacity in all matters pertaining to the medical work of the hospital. It is sometimes possible to establish clinical divisions. This tends to fix responsibility more definitely, stimulates scientific interest and facilitates the administration of the professional services. Usually the clinical departments of medicine, surgery, obstetrics and gynecology, and eye, ear, nose and throat may be organized. The responsibility of the hospital management must be emphasized in selecting the medical staff and a regular procedure followed in extending hospital privileges to any physician. Each physician should submit his qualifications in a written application, and these should be investigated by a credentials committee of the medical staff, which reports to the medical staff as a whole, with recommendations. When passed by the medical staff, the applicant is recommended to the governing board for membership in one of the staff divisions. It is considered advisable to extend hospital privileges for only one year with the understanding that, if the applicant's work and conduct have been satisfactory, further extension of privileges will be granted.

There are many ways of promoting cooperation between the medical staff and the governing board. The most satisfactory plan, which has been accepted by hospitals generally, is the organization of a joint conference or advisory committee, composed of duly selected members of the medical staff and the governing board, which meets regularly to discuss problems of mutual concern. The first step in the organization of a medical staff is to formulate complete by-laws, rules and regulations which set forth the type of organization and the duties, responsibilities and procedures. They should be approved by the medical staff, signed by the chairman and secretary, and submitted to the governing board for adoption. One of the major requirements of the approved hospital is that medical staff conferences be held at least once each month. Attendance at conferences should never be less than 75 per cent of the active medical staff. The attendance record of the individual member gives an excellent index of his interest in fulfilling his professional responsibility. Accurate minutes of all medical staff conferences should be prepared by the secretary of the medical staff. Every hospital, large or small, requires complete and acceptable medical records. In the small institution without interns or residents, the records may have to be written by the physicians themselves with whatever assistance the hospital can provide. A medical records department constitutes a major problem in many small hospitals. Physicians frequently fail to realize their responsibility, and the lack of a medical records consciousness on their part is regrettable. The appointment of a member of the medical staff as registrar of medical records or of an active committee on medical records to review the records daily, conscientiously and diligently, to see that they are kept up to a proper standard, is essential. The records should be filed in a conveniently located record room and should be regarded as the permanent property of the hospital, to be released only on order of the attending physician with the patient's consent or by order of a court.

All hospitals should be responsible for adequate clinical laboratory facilities for their patients. These should include as a minimum a small practical clinical laboratory where the essential examinations immediately necessary in assisting the clinician in making or confirming his diagnosis may be made. Too much stress cannot be placed on the importance of routine examination of all tissues removed at operation. Every piece of tissue should be sent to a qualified pathologist for macroscopic examination and a report. A microscopic examination should be made of all tissues at the discretion of the pathologist for further elucidation of the diagnosis. Investigation has shown that the larger accredited clinical laboratories are usually willing to cooperate with the small hospital in providing this necessary supplementary service at a cost that is not prohibitive, and certainly every patient in a modern hospital is entitled to this important service. In the small hospital some difficulty may be experienced in providing supervision and competent technical personnel for the clinical laboratory. Each hospital offers an individual problem, which in most instances can readily be solved. It is desirable for the hospital to have the part time services of a well trained clinical pathologist.

Every hospital should have at least a portable x-ray unit for an emergency service, particularly for the nonambulatory patient. In all instances the department should have medical supervision, for the responsibility of interpreting x-ray films constitutes medical roentgenology and is the work of a physician.

What must the small hospital do in the way of providing services such as metabolism tests, electrocardiography, oxygen therapy and physical therapy? Generally speaking, unless the hospital has a recognized, competent and complete service in these special features, some arrangement should be made with a nearby hospital which can provide them.

The financing of the small hospital offers perhaps one of its greatest problems. Indeed it is hardly conceivable that a hospital with an average occupancy of from thirty to forty patients could provide sufficient funds from its earnings to carry on an adequate service. Supplementing the ordinary revenues with gifts, donations, subsidies and endowments is always desirable. The director may have to be the business manager also, but he will delegate the details of accounting, bookkeeping and collections to a qualified accountant or bookkeeper. He usually oversees purchasing and supplies.

The hospital, though small, requires the usual utilities, which one speaks of as light, heat and power. An engineer will be necessary. Maintenance is an important function which is usually assigned to the engineer and includes repairs, plumbing, electrical service, cleaning, painting and upkeep of grounds. The hospital may have its own small laundry and render a satisfactory service in the care of the linen. On the other hand, it may find a contract with a commercial laundry more convenient and economical. Finally there are the housekeeping activities, which are common to all hospitals and in the case of

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the small hospital cannot always be directed or supervised by a trained housekeeper. Often these duties will be assumed by the director of the hospital or one of the staff of nurses. Sometimes, and indeed more commendably, the housekeeping activities are supervised by the dietitian, who combines the duties of her department with those of the housekeeping department.

It is quite possible for the small hospital everywhere to meet at least minimum requirements in the care of the sick and injured, either within its own organization or through supplementing the medical and other services from larger institutions nearby.

The Principles of Hospital Planning, with Special Reference to the Small Hospital

DR. WILLIAM HENRY WALSH, Chicago: An intelligent approach to a hospital planning program can be made only by a careful survey of the actual needs for hospital accommodations in the particular community. Public interest, convenience and necessity are primary considerations which, while given little or no attention in the past, will have to be carefully weighed in the future to avoid the uneconomic duplication of facilities now existing in some communities. The population trends of the community should be carefully studied to secure some idea of future increases which may make additional accommodations necessary. The value of a hospital, large or small, will depend on the caliber of the professional men who compose its medical staff, which is the backbone of the institution. A survey therefore should appraise the professional credentials and standing of the doctors who are to constitute the staff. Needless to say, if a community does not have a sufficient number of reputable practitioners to staff a hospital properly, and others cannot be readily secured, it would be folly to proceed further with the project.

After the completion of a survey, the report should be submitted to whatever local agencies may be interested, such as the hospital council, if there is one, the council of social agencies, the local medical society and the chamber of commerce. If the project receives the stamp of approval of such bodies, the sponsors may proceed with the assurance that it is launched on firm foundations and will command public interest and support. If it does not command such approval, it would be wise to defer action until every reasonable objection can be met.

No individual or group, whatever the motives, is justified in foisting on a community a hospital which is intended to be supported by voluntary contributions without first ascertaining the real need for and desirability of such an institution and securing unmistakable public approval. A hospital that is established without these precautions is not in the public interest and may become more of a liability than an asset.

Urgent reasons impel those who are charged with the responsibility of establishing a hospital to select architects who have had extensive experience in this specialty, who maintain an organization and facilities adequate to carry through such a complex undertaking and who possess the other attributes of personality and character so essential in the delicate and varied relationships involved.

The utilization of the services of a qualified medical consultant commences with the original survey of a hospital project, the report of which should embrace sufficient information for the formulation of a comprehensive planning program. The qualifications of a medical consultant on hospital planning are exacting and his success depends on his ability to coordinate and apply all available information bearing on a particular project, to understand thoroughly all the technical details of professional service and to transmit and interpret these to the architect in a comprehensible manner. The consultant should be skilful in analyzing community needs and in devising socially sound and economically feasible ways to meet them. The consultant is not an architect or an engineer, and a definite understanding of his own limitations in these respects is essential to harmonious relationships.

The preparation of final working drawings for a hospital is a time-consuming task which should not be commenced until all major problems of planning and design have been satisfactorily settled and this work can proceed uninterruptedly. The completeness of plans and perfection of design may be of little avail unless competent building contractors are engaged, since the application of the professional skill of the architect is so dependent on the character and ability of the contractors. It is therefore in the interest of the owners to delegate exclusively to the architects the responsibility of selecting contractors considered worthy and capable of bidding on the work. Competition of course is always desirable, but bidding ought to be limited to those firms whose organizations, credit and qualifications are comparable. After bids have been accepted, contracts awarded and work started, there should be required the most rigid compliance with the plans and specifications, and it is the duty of the owners to support the architect in the endeavor to enforce his rulings in any controversy that may arise.

A hospital may be financed from taxation, from a private bond issue, from small voluntary contributions or from specific bequests. Whenever it is possible to utilize the voluntary contribution method there is a greater likelihood of enlisting the enthusiastic interest and support of the community. In the case of the tax financed hospital, it is strongly urged that efforts be made to have enacted an enabling statute setting up a board of trustees, so as to remove the institution as far as possible from the stifling effect of partisan political manipulation. The establishment of a community hospital by the floating of a bond issue by private groups is justified only when no other method is feasible and the project is widely endorsed by all the professional and social agencies in the community. It seems to me that if a community really wants a hospital it will establish one by voluntary contributions or bring it into existence through the electorate, and I believe that there is never justification for any group pretending to be eleemosynary to saddle the burden of capital charges deliberately on the prospective patient without his knowledge and consent.

In considering the costs of hospital construction it should be assumed that the structure will be built of fire resisting materials. There are two common methods of roughly computing these costs prior to ascertaining the more exact estimates readily obtained after plans are completed: (1) the cubage method and (2) that based on the cost per bed. Calculating costs on a cubage basis, it is necessary to determine the number and type of beds to be provided and the number of cubic feet that must be reserved for each bed. That is to say, one must calculate not only the actual cubic space occupied by the bed itself or the private room but also that of the halls, stairways, elevator shafts, service rooms, surgical and obstetric suites, x-ray rooms and laboratories, administrative offices, kitchens, storage rooms and other space not used for beds, which often closely approximates 70 per cent of the modern hospital for the acutely ill. Cubage allowances run from 5,000 to 8,000 cubic feet per bed and, using the median of these, one may assume that it is possible to build a general hospital for acutely ill patients with an allowance of 6,500 cubic feet per bed. In estimating cubage for multistoried buildings it is customary to allow not less than 12 feet between floors, which will allow for ceilings of adequate height on all floors.

Hospital construction costs differ in various communities according to the labor and material markets, and further variations result from the differing abilities of architects in the selection of materials. At present in most parts of the northern section of the country a small general hospital can be constructed for approximately 55 cents a cubic foot, but the factors affecting cost are so constantly changing that too much reliance should not be placed on that figure. A fifty bed hospital therefore, with an allowance of 6,500 cubic feet per bed, at a cost of 55 cents a cubic foot, will cost $178,750 for construction, or a cost per bed of $3,575. This would include a low pressure heating plant and a laundry room built into the structure. To these figures must be added the fees of the architect and consultant, which will usually be about 6 per cent of the total cost of the project, and the cost of the furnishings and equipment. To provide a fifty bed hospital with modest furnishings and the minimum of equipment required to conduct a modern hospital, an outlay of not less than $40,000 will be necessary. Summing up the items mentioned, there is a cost of $229,475, which increases the cost per bed to $4,589. This does not include any landscaping, walks or roads that might be required,

although when these are not too elaborate their cost can be met within the amount stipulated. I have not considered a nurses' home, the cost of which would be considerably lower per bed than the hospital.

The foregoing data when intelligently used will furnish sufficient information for an approximate calculation of costs early in a hospital project, but unless all the factors mentioned and others are considered, misleading figures will result. I have merely attempted to indicate methods and principles of computing preliminary estimates, and again I emphasize the point that truly accurate information on the cost of a hospital is that obtained only after a project is completed and all factors affecting costs are presented.

Housing the Small Medical Center

CARL A. ERIKSON, Architect, Chicago: I shall limit myself to hospitals of thirty beds and less. Intended of course to care for the community sick, they have two collateral purposes. One is that by pooling its resources the community is able to provide itself with needed medical equipment, such as x-ray apparatus, laboratories and surgical facilities, far beyond the resources of any individual doctor. By means of the small hospital the community also centralizes its medical skill, represented by doctors, nurses and technicians. These purposes of the hospitals in smaller communities are a very important reason for their construction.

Records show that the small hospital generally seems to have more beds than it needs. The occupancy for 185 hospitals of less than thirty beds according to the 1938 American Medical Association records was but 54 per cent. These were the only hospitals in each of 185 villages and towns in Illinois and six surrounding states. Small hospitals care for all classes of patients. The relation of total admissions to average occupancy was calculated for the 185 hospitals and found to be 40, and for 109 nonproprietary hospitals the relation was 38; the figures for three of the leading voluntary hospitals in Chicago were 35, 38 and 39. Obstetric patients probably claim more beds than in the average city hospital. The records for the 185 hospitals indicate that such patients comprised 16 per cent of those admitted, whereas they comprised but 8 per cent for the nine largest Chicago hospitals. Surgical patients represented 33 per cent of those admitted in twenty small Saskatchewan hospitals; the 1936 records of all the Carolina hospitals aided by the Duke Foundation show that 60 per cent of the patients were admitted for operations.

The housing of patients is complicated by the wide fluctuation in occupancy to which small hospitals are subject. To meet the economic and clinical needs, multiplied by 2 because of sexes, extreme flexibility in assignment of rooms is obviously needed. Preferably none of the rooms should contain more than two beds, and every private room should be large enough for two beds; about three fourths of the beds should be in two bed rooms and the remainder in private rooms. Such a hospital should be able to average 70 per cent capacity and operate for a short time at 110 per cent capacity if necessary. Twenty beds in this kind of hospital might average fifteen occupied beds without any more difficulty than a twenty-five bed hospital with a number of four bed or larger wards might have with the same annual average occupancy.

Too often the sponsors of small hospitals take as their model some larger hospital, lop off the unnecessary beds and shrink the rest, a process that is unsatisfactory. It is very simple to assign 60 square feet to each bed in a two or four bed ward; it is something else to use it comfortably. The generally accepted minimum of 80 square feet per bed is none too large for practical operation, nor does it often permit anything more than the minimum distance between patients. The single room should preferably contain not less than 160 square feet, which will permit its use for two beds when needed. At least two rooms and preferably four in every hospital should have individual toilets, which will permit their use in isolation cases and at other times as private rooms. Convenience and accepted technic dictate that each room should have a wash basin if the building budget can be stretched that far. A closet or wardrobe should not be overlooked. A utility room and linen closet, a janitor's closet, toilets and a bath, simply equipped and detailed, are a necessary accompaniment of each group of patients' rooms.

The patients should be grouped together to form a single nursing unit; to divide them among two or more floors either increases nursing costs or decreases the nursing care. Each added floor of patients requires another set of baths, utility rooms and linen closets, at a corresponding cost.

A small reception room adjoining the entrance is a necessity, and it should be completely shut off from the hospital corridor. Administration must be of the simplest character, but a small office is a necessity and should adjoin the entrance and reception room. In view, however, of the limited nursing and administrative personnel and their varied duties, the nurse's charting desk should be so placed that it controls, when needed, the main entrance as well as all the patients' rooms.

The twenty-five bed hospital will average about one operation every day and one birth every four or five days; the ten bed hospital, one operation every third day and a birth every ten or twelve days. In the hospital as small as ten beds one operating room should be sufficient, supplemented when necessary by a medical service room. The twenty-five to thirty bed hospital should have an additional operating room. The operating rooms should be about 16 by 20 feet. Scrubbing can be done in the operating room and many surgeons would prefer this. A surgeon's dressing room and toilet are essential. The nurses' workroom should be large enough to make a really comfortable workroom, probably not less than 60 to 80 square feet of clear floor space, with cases, closets, sinks, work tables and sterilizers outside this area.

Opinions will vary as to the desirable equipment. Certainly there will be an x-ray machine and a laboratory; beyond that I hesitate to make any predictions. Most of the equipment, however, aside from some forms of x-ray apparatus, is small and easily handled. The cardiograph, most forms of electrotherapy machines, the essential of basal metabolism apparatus, as well as many of the smaller x-ray machines, are readily portable. One room can be used for all of this equipment. To avoid cluttering up the room it should be possible to store the unused equipment in adjacent closets.

Without a balanced budget the small hospital cannot long exist; hence it must have a rigorously limited personnel. The duties of laboratory, x-ray and physical therapy technicians will have to be divided among the doctors or the nursing personnel or allotted to a single technician. A combination of a laboratory and the drug room in one seems feasible. I would suggest a third use for this room, that of x-ray dark room. All the diagnostic and therapeutic services should if possible be grouped together, as it makes for the best use of limited personnel. However, x-ray and physical therapy facilities should be readily accessible to outpatients. If they are all placed on the same floor with the patients, and that floor is close to the ground, there is no need for an elevator or large stairs and substantial economies in building and operation result.

A laundry may not prove to be an economy. The boiler room should be as simple and as largely automatic as possible. Cheap electric power and bottled gas have largely eliminated one of the former problems of the small hospital, how to get high pressure steam for sterilizing. Examination of the plans of many small hospitals discloses that most of the builders were not "store room conscious" at the time of planning; the management subsequently has no doubt become painfully so.

Two of the three functions of the hospital have been discussed; the third is the centralization of the medical personnel. The housing of nursing and technical personnel is essential; their skill must be on tap twenty-four hours a day to care for emergencies. They must therefore have quarters in or adjoining the hospital. Small hospitals do not have interns and few can afford to pay a resident physician; yet a doctor must always be on call. Probably in these days of the telephone and the automobile any doctor in a small community can get from his home to the hospital quicker than the resident in the large hospital gets to his patient from his quarters.

As a layman I would expect benefits from the association of public health activities with the curative medical practice of the small hospital. Some free outpatient work must be done at the hospital. It seems reasonable to assume that tuberculosis, venereal disease, pediatric, maternal, orthopedic and other governmentally supported clinics should be held at the community medical center. Also, if there is a public health officer, should

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he not be close to these facilities and to the headquarters of the practicing physicians rather than at the county court house?

It is generally agreed that hospitals large or small should be of fireproof construction, but if the hospital has only one story, masonry outside and in the corridor walls, with a fire resistive first floor and wood ceiling joists and rafters plastered on wire lath may make an acceptable substitute.

The principles of construction are identical with those of the larger hospital but their application to the small one requires a bit of common sense; a flashlight as a part of the equipment of a night nurse may be just as efficient as a built-in night light, at an infinitesimal portion of the cost. The finish should, so far as is practicable, be kept within the scope of the local craftsmen. Terrazzo and tile may prove expensive if the contractor and crew must come from distant points for a small job. Local resources in building material should be carefully canvassed and used to the utmost.

DISCUSSION ON THE SMALL HOSPITAL

EDGAR MARTIN, Architect, Chicago: Each community has its own hospital problem, different from and entirely independent of that of other communities. A hospital illustrative of the paper presented by Dr. Walsh contains 300,000 cubic feet. There are two five bed wards and thirteen private rooms, all of which are convertible into two bed wards, and four special beds. This normally provides thirty beds. Depending on the intensity of use of the two bed wards, the capacity will be either twenty-seven or forty beds, and in an emergency the number of beds in the wards can be increased, the solarium can be used as a ward and the hospital can be expanded to a bed capacity of forty-eight beds.

Every hospital room articulates with a subutility room. This arrangement does away with the commode and bedpan travel down the corridors. It is a little more expensive, but when the special facilities are provided the extra expense will be amortized in a short time by the saving in nursing charges. In a number of the private rooms the subutility room opens from a connecting corridor. A wide building is always less expensive than a long building, and there is an arrangement whereby a single door swings on a quadrant between two door openings, so arranged that on a patient's entering the bath the door closes off from the adjacent room and automatically locks. The patient on leaving automatically unlocks the door in the other room, and the toilet then is in a position for use by the other patient. While one patient is using the toilet, there are two doors closed between it and the adjacent room, shutting out all sounds.

The need has been emphasized both by Dr. MacEachern and Dr. Walsh of the necessity of the departmentalization of the various medical services. Departmentalization is complicated in any hospital, but it is particularly complicated in the small hospital. The casualty department is the one department in no ratio to the bed capacity of the hospital. It is placed in a part of the building where the commotion and excitement that always attend accident cases will least disturb the routine services of the rest of the hospital. It has a secluded entrance, with adequate space for relatives and friends and for less injured patients who are waiting while the more seriously injured are being taken care of. A two table minor operating room is provided which articulates closely with the x-ray department, the splint storage room and the operating suite, and in the operating suite is a reserve orthopedic table for use in the case of fractures.

The obstetrics department is placed where the noise is less disturbing to the rest of the hospital and where absolute privacy is obtained. The waiting patients and the postdelivery patients are separated from the delivery suite. The nursery is so placed that the general public and relatives can view the babies without intruding on the privacy of the maternity patients. The nursery is equipped for infectious disease technic and has plate glass windows opening on the visitors' space.

The administrative section is self contained, entirely outside the zone of medical and nursing care. The kitchen department is provided with full facilities for dietetics as well as general foods and food storage.

(To be continued)

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, March 18, page 1099.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, May 1-2 (Part II only—limited to a few centers), June 19-21, and Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Oral* examinations for all candidates, St. Louis, May 13-14. *Written.* Various places throughout the United States, Sept. 9. Applications must be filed by July 11. *Oral.* Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Philadelphia, Oct. 30-Nov. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various sections of the United States, Oct. 16 and Feb. 19. Formal application must be received before Aug. 20 for the Oct. examination and on or before Jan. 1 for the Feb. examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: General oral, clinical and pathological examinations for all candidates, Part II examinations (Groups A and B) will be held in St. Louis, May 15-16. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various cities throughout the country, Aug. 5. *Oral.* St. Louis, May 15 and Chicago, Oct. 7. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: St. Louis, May. Applications must be filed with the Secretary on or before April 1. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: St. Louis, May 12-13 and Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Richmond, Va., April 3-4. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Cincinnati, Nov. 15. Appointments must be made before July 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Chicago, May 13. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: St. Louis, May 11-14. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part I.* Simultaneously in various centers throughout the United States, April 3. *Part II.* New York, May 8 and May 9. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: White Sulphur Springs, W. Va., May 26-28. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Michigan October Examination

Dr. J. Earl McIntyre, secretary, Michigan State Board of Registration in Medicine, reports the written examination held at Lansing, Oct. 12-14, 1938. The examination covered fourteen subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-one candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine		(1938)	85.9*
Loyola University School of Medicine		(1938)	78.7†
Northwestern University Medical School		(1937)	83*
Rush Medical College	(1937) 82.4,* 86.7,*	(1938)	81.8*
School of Medicine of the Division of Biological Sciences		(1938)	87.1*
University of Louisville School of Medicine		(1937)	85.5
University of Michigan Medical School	(1936) 87.4,	(1938)	81.7*
University of Minnesota Medical School		(1933)	78.9
Creighton University School of Medicine		(1937)	80.4
Cornell University Medical College		(1937)	82.2
New York Medical College and Flower Hospital		(1938)	81.2*
Duke University School of Medicine		(1937)	83.6
University of Cincinnati College of Medicine		(1937)	86.9*
Marquette University School of Medicine		(1938)	83.6,* 84.5†
University of Wisconsin Medical School		(1937)	89.1
University of Western Ontario Medical School		(1936)	85.3*
McGill University Faculty of Medicine		(1937)	83.6*

* License has not been issued.

† This applicant has completed the medical course and will receive the M.D. degree on completion of internship. License has not been issued.

Maryland (Homeopathic) December Examination

Dr. John A. Evans, secretary, Board of (Homeopathic) Medical Examiners, reports the written examination held at Baltimore, Dec. 13-14, 1938. The examination covered nine subjects and included seventy questions. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Hahnemann Medical College and Hospital of Philadelphia	(1937) 80,	(1938)	86, 90, 94

Book Notices

Personality Structure in Schizophrenia: A Rorschach Investigation in 81 Patients and 64 Controls. By Samuel J. Beck, Ph.D., Head of the Psychology Laboratory, Department of Psychiatry, Michael Reese Hospital, Chicago. With a preface by C. Macfie Campbell, M.D. Nervous and Mental Disease Monograph No. 63. Boards. Price, $2. Pp. 88, with 12 illustrations. New York: Nervous and Mental Disease Publishing Co., 1938.

This excellent monograph reports a study of the fantasies produced by persons when exposed to the observation of outlines created by the "ink blot method" and a critical analysis of the verbalizations regarding what they fantasied as a reaction to this observation. The test was originally devised by Rorschach for the study of schizophrenia, and Beck, following Rorschach, uses the method to distinguish between the schizophrenic and other personality problems. This test, which is being utilized more and more for diagnostic and prognostic purposes, offers an objective approach to the whole problem of mental illness. The original work by Rorschach, who died in 1922, has been carried on by Oberholzer and his students and has been further influenced by Behn-Echenburg (who worked with adolescents), Schneider (with inhibited children), Pfister (with the feebleminded), M. Bleuler (with adult siblings), von Verschuer (with twins), Veit (with Parkinson's disease) and Munz (with personality types according to Kretschmer and others). In this country D. M. Levy, who worked with Oberholzer, brought the test to the Institute for Child Guidance in New York, where Beck began its application and soon developed into one of its foremost exponents and technicians. As Beck states, "What appears from the Rorschach experiment is that, in each kind of personality, whether it be healthy adult, problem child, depressed, hysteric, schizophrenic or any other, certain psychological processes hang together and the organization of these processes *is* the particular kind of personality . . . it is the structure so found in schizophrenia . . . and comparing it with that in individuals not so suffering that the present study attempted to inspect." Every psychiatrist and psychologist should familiarize himself with this test because it is certain to occupy a foremost position in any study of personality structure.

La tuberculose pulmonaire chez les sujets apparemment sains et la vaccination anti-tuberculeuse. Par L. Sayé, professeur de phtisiologie à l'Université de Barcelone. Paper. Price, 60 francs. Pp. 256, with 88 illustrations. Paris: Masson & Cie, 1938.

This monograph contains some of the most modern and most needed teaching in tuberculosis literature. It may be compared to the back of a tapestry that is rarely ever seen. Sayé has turned the tuberculosis tapestry around so that the unseen side comes into better view. An extensive review of the literature interspersed with his own results makes up this report.

Tuberculosis in those apparently well is the seed from which an important part of clinical disease emanates and constitutes the unseen source of the disease that is the greatest barrier in the way of control and eradication. While all tuberculosis arises from an exposure to some open case, those who are exposed to known open cases present from five to six times as much clinical disease as is found in the general population. In one of the author's series 18 per cent of such cases were open. This introduction may be considered the principal theme of the work. It is a question first of contact, second of dosage, and then to a minor degree environment, age, race, sex and occupation. Owing to the fact that many persons with open tuberculosis are apparently well, they are one of the greatest problems of tuberculosis workers today.

Surveys of various authors within general populations reveal figures for tuberculosis in the apparently healthy that vary widely but are roughly proportional to the death rate of the particular group. It is roughly 1 per cent for countries like the United States and Germany and rises to about 2 per cent in most other European countries with a few exceptions, such as Poland, where it is over 3 per cent. In China it is between 7 and 8 per cent. These figures have been obtained by tuberculin and x-ray surveys on soldiers, students and various occupational and social groups. Important are the figures for medical students and nurses. Nurses on the average have five to six times the general rate, but some tuberculosis services, especially some handled by Sisters of Charity, have rates as high as 12 per cent. In other places where antiseptic technic has been used it drops almost as low as the rate for the general population. The rate for medical students increases about four times that for other professional students, from the first to the fourth year inclusive.

The occupation is not as important as the contacts within the occupation and the public health intelligence of the groups. Prisoners have a high rate (9 per cent for the sixth decade) and Chinese students, Indians and Negroes have a high rate (from three to four times the average) while certain universities (Yale, Pennsylvania) have a low incidence of open disease (about half the general incidence) in spite of a relatively high infection rate. [This is presumably due to an elimination of heavy dosage by a knowledge of sanitary precautions. —ED.]

The ages most affected include principally infants and young adults over other ages, while young females predominate over males. Many of the symptomless forms have been followed by x-ray and bacteriologic studies. With cultures and animal inoculations on sputum and particularly stomach washing, it has been found that persons who do not show symptoms may discharge bacilli for three or four years after healing has begun. The lymph nodes in skin and mucous types clear up within a year or two.

The diagnosis is best made with the x-rays and tuberculin, supplemented by cultures and animal inoculations on sputum and stomach washings. The author uses a combination of the Pirquet and Mantoux tests, stepping the latter up as high as 1 mg. if necessary. Then for a diagnosis of latent or active disease the fluoroscope, paper films and finally, in doubtful cases, regulation films are used in order. By this progression the cost is kept at a minimum. There is a negative agreement of 47.3 per cent and positive agreement of 10.5 per cent (total 58.8 per cent) of films and fluoroscopic study. The films are superior by around 30 per cent with certain cases of each in doubt.

There is a small but important group in which there are no physical or x-ray signs but which are positive for tubercle bacilli. This may be due to small foci invisible on the roentgenogram, to bacilli present in apparently normal tissue, to lesions not yet developed, to lesions behind the heart, to ruptured lymph nodes, to cleared pneumonic or epituberculosis lesions or to tuberculous bronchitis. A very few of such bacillary observations are nontuberculous or are extraneous bacilli. On rare occasions there may be positive clinical signs with all else negative.

Reviewing work of various authors, Sayé shows how prognosis is worse in primary lesions with large calcifications and is roughly dependent on the size of the dose and the age of the infected patient. In ulcerative lesions 79 per cent of patients are dead after fourteen years. [This perhaps does not include recent figures.—ED.] There are 8 per cent of late exacerbations in primary lesions up to 25 years; 10 per cent of small exudative foci are open after three years. Prognosis is favorable in 63 per cent of early and moderately advanced cases, 34 per cent in moderately advanced and far advanced cases and 2 per cent in far advanced cases. [This again probably does not include the changes brought about by the intensive use of modern surgery.—ED.]

The author's recommendations for treatment are generally sound, including a conservative extension of pneumothorax to include all types of open cases and the use of gold salts in the treatment of certain lymph node types of children. The author has been one of those to use gold salts with apparent success. Indications for pneumothorax in closed cases, in the author's opinion, is not well defined.

In the chapter on prophylaxis the author makes out an excellent case for BCG, citing figures that show an increase in protection of treated cases from four to ten times over untreated cases.

The book is recommended for physicians and tuberculosis workers.

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Thoracic Surgery. By Ferdinand Sauerbruch, Professor of Surgery in the University of Berlin, and Laurence O'Shaughnessy, F.R.C.S., Hunterian Professor in the Royal College of Surgeons of England. A revised and abridged edition of Sauerbruch's Die Chirurgie der Brustorgane. Cloth. Price, $13.50. Pp. 394, with 230 illustrations. Baltimore: William Wood & Company, 1937.

This moderate size volume is an entirely new work. It is a revised and abridged edition of Sauerbruch's three volume work "Die Chirurgie der Brustorgane" based on this author's knowledge and experience of surgery of the chest gathered during his work at the clinics of Zurich, Munich and Berlin. It first appeared in 1918 as a small single volume, in 1921 in two volumes, and in 1928 and 1930 in three volumes. Sauerbruch is unquestionably the foremost authority on chest surgery in Germany. Mr. O'Shaughnessy, a British surgeon specializing in thoracic surgery, worked for a considerable time in Professor Sauerbruch's clinic and the new volume was written by the two surgeons in collaboration. It contains the best in German surgical practice and, in addition, the most recent advances and most valuable operative procedures developed in Great Britain and the United States. The volume is strictly down to date and presents in concise form the entire subject of thoracic surgery including the significant contributions of the last ten years.

A few chapters are somewhat disappointing. The section on surgical relief of cardiac ischemia reviews all the older work and includes the more recent operations, even O'Shaughnessy's operation (1936) in which a pedicled omental graft is sutured to the heart, and Lenzius's operation (1937) in which, after partial excision of the pericardium, the lung is attached to the heart. But these operations are not described in enough detail and are not illustrated. The same criticism applies to the surgical treatment of angina pectoris. Here no mention is made of total thyroidectomy, none of the operations are illustrated, no statistical information is given, and the authors conclude by stating that until the surgical treatment of angina pectoris can rest on a more secure anatomic and physiologic basis the successes obtained in a few isolated cases should not encourage its general adoption. White's experiences alone with paravertebral injection with alcohol of the stellate and upper five dorsal ganglions would seem to warrant more optimism.

Although it is impossible to compress into one volume all the valuable information contained in Sauerbruch's three volume system, this volume does contain most of the essentials and, in addition, much that has been learned since his last edition appeared in 1930. For this reason those surgeons who already possess this set will welcome having the work brought down to date, and for those unable to read German this volume will be unusually valuable.

Spectrochemical Analysis in 1938: A Companion Book to "Spectrochemical Abstracts 1933-38." By F. Twyman, F.R.S. Cloth. Price, 4s. 4d. Pp. 68, with 16 illustrations. London: Adam Hilger Limited, 1938.

Twyman, physicist to Adam Hilger Limited, manufacturer of optical instruments, has now presented to his fellow workers a "last minute" account of references pertaining to spectrochemical analysis. The monograph is divided into six sections and a subject index. Twyman makes a candid selection of the literature. The second chapter, on quantitative spectrochemical analysis with the microphotometer, is of importance because it is the field which receives most attention at present. Chemists, physicists and biologists interested in this branch of science need this booklet on their study table.

Chemie und Technik der Gegenwart. Herausgegeben von Dr. H. Carlsohn, Dozent an der Universität Leipzig. Band XIX: Vitamine und Hormone und ihre technische Darstellung. Teil 3: Darstellung von Hormonpräparaten (ausser Sexualhormonpräparaten). Von Dr. Erich Vincke. Boards. Price, 7.50 marks. Pp. 162, with one illustration. Leipzig: S. Hirzel, 1938.

The third volume of the series on vitamins and hormones is about the technical preparation of the hormones other than sex hormones. A portion of the book is concerned with a discussion of general methods of preparation, with suitable references. There is a brief general description of methods of preserving materials and extracting the active principles with various solvents. Then follow chapters devoted to individual products, with a brief discussion of the chemistry, methods of detection and estimation and detailed description of methods of preparation. There is also a brief discussion of the clinical use of some of the products. At the end of each chapter there is a list of articles in the scientific literature followed by a separate tabulation of important patents in various countries. There are a number of useful tables throughout the book which provide a list of commercial preparations of each hormone that are available.

Kliniske Studier over disseminoret Sklerose og beslægtede Lidelser. Af Mogens Ellermann. [Clinical Studies on Disseminated Sclerosis and Related Diseases.] Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad. København. Paper. Pp. 233. Copenhagen: A/S Oscar Fraenckel & Co., 1937.

This excellent monograph is based on 122 cases of multiple sclerosis and thirty-four cases of related diseases (lethargic encephalitis and disseminated encephalomyelitis), with brief records of all cases which were studied in Copenhagen clinics. There are separate chapters for each of the principal symptoms and syndromes encountered, such as sensory disturbances, ataxia, ocular symptoms, sphincter disturbances and psychic symptoms. In each such chapter a review of the literature is first given, followed by an account of the author's experience. There are lucid chapters dealing with the relationship and contrasts between disseminated sclerosis, lethargic encephalitis, encephalomyelitis and neuromyelitis optica. Every neurologist who can read Danish will be grateful to the author for this splendid compilation.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Expert Witness Must Have Knowledge of Standards of Local Physicians.—The plaintiffs, husband and wife, sued the defendant for malpractice, alleging that he improperly, negligently and carelessly prescribed for the wife a remedy referred to as "phanodorn." The trial court entered a judgment of non-suit at the conclusion of the plaintiffs' evidence, and the plaintiffs appealed to the district court of appeal, second district, division 2, California.

It was encumbent on the physician, said the court, to apply that degree of care, skill, knowledge and attention ordinarily possessed and exercised by physicians under similar circumstances in the locality in which the treatment was administered. To justify submitting the issues to the jury, it was necessary for the plaintiffs to prove negligence or lack of care or skill on the physician's part by expert witnesses familiar with the practice concerning the patient's infirmities in the locality in which she was treated. Without such testimony no valid judgment could be rendered against the physician. To establish the negligence of the defendant, the plaintiffs presented as witness a physician who testified that he was a graduate of a medical college and that he had practiced in Los Angeles, the locality in which the treatment was rendered, since 1933. A hypothetic question was then propounded to him to which objection was made and sustained. The plaintiffs then rested their case without making any further effort to show the competency of the witness.

The district court of appeal held that the trial court did not err in sustaining the objection to the question propounded the witness because it was not shown that the witness was familiar with the work and practices of other physicians in the community in which the treatment was given. In so holding the court relied on *McGuire* v. *Baird*, 9 Calif. (2d) 353, P. (2d) 915, in which the Supreme Court of California said:

> The qualifications of a witness to testify in a malpractice case are definitely and clearly established by the decisions of the courts of this state. In the recent case of *Rasmussen* v. *Shickle*, 4 Cal. App. 2d 426, 430, 41 P. 2d 184, the court very aptly defined such qualifications in the following language: "To qualify as such expert in a malpractice case against a

physician the witness must not only show himself to possess learning and knowledge of the subject of inquiry sufficient to qualify him to speak with authority on the subject, but also a familiarity with the treatment and degree of care and skill of other practitioners in the locality in question, sufficient to qualify him to say whether or not the defendant's treatment was consistent with what other physicians in the exercise of reasonable care might do under similar circumstances."

Since the plaintiff's case was not supported by the testimony of expert witnesses, the trial court, in the opinion of the district court of appeal, properly granted a motion for a non-suit.—*Taylor v. Fishbaugh (Calif.), 79 P. (2d) 174.*

Workmen's Compensation Acts: Strangulation of Pre-Existing Hernia Not Compensable.—The claimant's husband had suffered from hernia since childhood. While the hernia had troubled him frequently, he had worked as a miner for at least thirty years. On March 12, 1937, in the course of his employment in a mine, he assisted in moving a piece of slate weighing about 700 pounds. About thirty minutes later he complained of being sick and went home. His condition continued to grow worse and a physician was called, who caused the employee to be taken to a hospital where he was operated on for a strangulated hernia. A secondary operation was performed some days later, pneumonia developed and the employee died March 18. His widow, the claimant in the present case, filed a claim for compensation which was denied by the compensation commissioner. This denial was affirmed by the compensation appeal board and the claimant appealed to the Supreme Court of Appeals of West Virginia.

The workmen's compensation act of West Virginia provides that an employee may be compensated for hernia if: (1) there was an injury resulting in hernia; (2) the hernia appeared suddenly; (3) it was accompanied by pain; (4) the hernia immediately followed an injury; (5) the hernia did not exist prior to the injury for which compensation is claimed. The act, in the opinion of the court, intended to bar compensation for hernia in cases in which the disability existed prior to an injury for which compensation is sought. It refers to "all claims for compensation for hernia," and to obtain compensation therefor certain things must definitely be proved to the satisfaction of the commissioner, the first being "that there was an injury resulting in hernia." It cannot be said, the court concluded, that a hernia resulted from an injury in a case, such as the one at bar, in which the hernia had existed from childhood.

For the reasons stated, the denial of compensation was affirmed.—*Jordan v. State Compensation Commissioner (W. Va.), 197 S. E. 20.*

Society Proceedings

COMING MEETINGS

American Medical Association, St. Louis, May 15-19. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

Alabama, Medical Association of the State of, Montgomery, April 18-20. Dr. D. L. Cannon, 519 Dexter Ave., Montgomery, Secretary.

American Academy of Tuberculosis Physicians, St. Louis, May 13-14. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.

American Association for the Study of Goiter, Cincinnati, May 22-24. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.

American Association for the Study of Neoplastic Diseases, Detroit, April 6-8. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue N.W., Washington, D. C., Secretary.

American Association for Traumatic Surgery, Hot Springs, Va., May 8-9. Dr. Ralph G. Carothers, 409 Broadway, Cincinnati, Secretary.

American Association of Anatomists, Boston, Apr. 6-8. Dr. E. R. Clark, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Genito-Urinary Surgeons, Williamsburg, Va., May 24-26. Dr. Charles C. Higgins, 2050 East 93d St., Cleveland, Secretary.

American Association of Pathologists and Bacteriologists, Richmond, Va., Apr. 6-7. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American Association of the History of Medicine, Atlantic City, N. J., April 30-May 1. Dr. Henry E. Sigerist, 1900 Monument St., Baltimore, Secretary.

American Association on Mental Deficiency, Chicago, May 3-6. Dr. E. Arthur Whitney, Washington Road, Elwyn, Pa., Secretary.

American College of Physicians, New Orleans, March 27-31. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., May 1-2. Dr. Russell S. Boles, 1901 Walnut St., Philadelphia, Secretary.

American Gynecological Society, White Sulphur Springs, W. Va., May 22-24. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.

American Laryngological Association, Rye, N. Y., May 24-26. Dr. James A. Babbitt, 1912 Spruce St., Philadelphia, Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, May 10-11. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medico-Legal Association, Chicago, May 12-13. Dr. Michel Pijoan, 124 Commonwealth Ave., Boston, Secretary.

American Otological Society, New York, May 22-23. Dr. Thomas J. Harris, 104 East 40th St., New York, Secretary.

American Pediatric Society, Sky Top, Pa., Apr. 27-29. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Physiological Society, Toronto, Canada, Apr. 26-29. Dr. A. C. Ivy, 303 East Chicago Ave., Chicago, Secretary.

American Psychiatric Association, Chicago, May 8-12. Dr. Arthur H. Ruggles, Butler Hospital, Providence, R. I., Secretary.

American Society for Clinical Investigation, Atlantic City, N. J., May 1. Dr. Isaac Starr, University of Pennsylvania Hospital, Philadelphia, Secretary.

American Society for Experimental Pathology, Toronto, Canada, April 26-29. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Toronto, Canada, Apr. 26-29. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.

American Society of Anesthetists, New York, Apr. 14. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.

American Society of Biological Chemists, Toronto, Canada, Apr. 26-29. Dr. C. G. King, Univ. of Pittsburgh, Dept. of Chemistry, Pittsburgh, Secretary.

American Society of Clinical Pathologists, St. Louis, May 12-14. Dr. Alfred S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

American Surgical Association, Hot Springs, Va., May 11-13. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.

American Therapeutic Society, St. Louis, May 12-13. Dr. Joseph F. Elward, 1726 Eye St. N.W., Washington, D. C., Secretary.

Arizona State Medical Association, Phoenix, Apr. 13-15. Dr. D. F. Harbridge, 15 East Monroe St., Phoenix, Secretary.

Arkansas Medical Society, Hot Springs National Park, May 8-10. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Associated Anesthetists of the United States and Canada, St. Louis, May 15. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.

Association for the Study of Internal Secretions, St. Louis, May 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.

Association of American Physicians, Atlantic City, N. J., May 2-3. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

Association of Military Surgeons of the United States, Washington, D. C., May 8-10. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

California Medical Association, Del Monte, May 1-4. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.

Connecticut State Medical Society, New Haven, May 25-26. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

District of Columbia, Medical Society of the, Washington, May 3-4. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Executive Secretary.

Federation of American Societies for Experimental Biology, Toronto, Canada, Apr. 26-29. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.

Florida Medical Association, Daytona Beach, May 1-3. Dr. Shaler Richardson, 111 W. Adams St., Jacksonville, Secretary.

Georgia, Medical Association of, Atlanta, Apr. 25-28. Dr. Edgar D. Shanks, 878 Peachtree St. N.E., Atlanta, Secretary.

Illinois State Medical Society, Rockford, May 2-4. Dr. H. M. Camp, 224 S. Main St., Monmouth, Secretary.

Iowa State Medical Society, Des Moines, Apr. 25-27. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.

Kansas Medical Society, Topeka, May 1-4. Mr. C. G. Munns, 112 W. 6th St., Topeka, Executive Secretary.

Louisiana State Medical Society, Alexandria, Apr. 24-26. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 25-26. Dr. Walter Dent Wise, 1211 Cathedral St., Baltimore, Secretary.

Mississippi State Medical Association, Gulfport, May 9-11. Dr. T. M. Dye, McWilliams Bldg., Clarksdale, Secretary.

Missouri State Medical Association, Excelsior Springs, Apr. 10-12. Dr. E. J. Goodwin, 634 North Grand Blvd., St. Louis, Secretary.

Nebraska State Medical Association, Grand Island, May 2-4. Dr. R. B. Adams, 414 Federal Securities Bldg., Lincoln, Secretary.

New Mexico Medical Society, Gallup, May 11-13. Dr. L. B. Cohenour, 219 W. Central Ave., Albuquerque, Secretary.

New York, Medical Society of the State of, Syracuse, April 24-27. Dr. Peter Irving, 2 East 103d St., New York, Secretary.

North Carolina, Medical Society of the State of, Cruise to Bermuda, May 9-14. Dr. T. W. M. Long, Roanoke Rapids, Secretary.

North Dakota State Medical Association, Fargo, May 8-10. Dr. Albert W. Skelsey, 20½ North Broadway, Fargo, Secretary.

Ohio State Medical Association, Toledo, May 3-4. Mr. C. S. Nelson, 79 E. State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Oklahoma City, May 1-3. Dr. L. S. Willour, Third and Seminole, McAlester, Secretary.

Pacific Coast Surgical Association, San Francisco, Oakland, Del Monte, March 28-31. Dr. H. Glenn Bell, University of California Hospital, San Francisco, Secretary.

Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., Apr. 29. Dr. W. C. Spain, 116 E. 53d St., New York, Secretary.

South Dakota State Medical Association, Aberdeen, Apr. 24-26. Dr. Clarence E. Sherwood, Madison, Secretary.

Tennessee State Medical Association, Jackson, Apr. 11-13. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Texas, State Medical Association of, San Antonio, May 8-11. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, St. Louis

21: 1315-1426 (Dec.) 1938

Eye Lesions in Experimental Infections, with Special Reference to Arthritis. C. Berens, D. M. Angevine, L. Guy and S. Rothbard, New York.—p. 1315.
Lectures on Motor Anomalies: IV. The Etiology of Strabismus. A. Bielschowsky, Hanover, N. H.—p. 1329.
Chemical Pathogenesis of Cataract. A. C. Krause, Chicago.—p. 1343.
Treatment of Concomitant Convergent Strabismus: Results Secured by Atropine, Occlusion and Correction of the Refractive Error. E. A. Vorisek, Chicago.—p. 1356.
Sarcoma of the Iris: Case Report. H. D. Rosenbaum, St. Louis.—p. 1360.
Bilateral Accommodation Paralysis and Unilateral Scotoma in Sphenoidal Sinus Disease: Case Report. Norma B. Elles, Houston, Texas.—p. 1365.
The Speed of Picture Recognition and the Speed of Word Recognition in Cases of Reading Difficulty. T. H. Eames, Boston.—p. 1370.
The Problem of Statistics Relating to Blindness and the Blind. H. Best, Lexington, Ky.—p. 1376.

Annals of Surgery, Philadelphia

109: 1-160 (Jan.) 1939

Ligature of the Common Carotid Artery in Cancer of the Head and Neck. W. L. Watson and S. M. Silverstone, New York.—p. 1.
*Localization of Intracranial Lesions: Determination of Areas of Hyperpathia of the Scalp. F. H. Lewy, Philadelphia.—p. 28.
Spinal Subarachnoid Injection of Absolute Alcohol for Relief of Intractable Pain. W. Pitts and J. Browder, Brooklyn.—p. 33.
Recurring Peritonitis Following Operative Reduction of a Strangulated Inguinal Hernia: Cure Following Resection of the Damaged Loop. R. H. Meade Jr., Philadelphia.—p. 43.
Nonrotation of the Intestine. R. Marx, Los Angeles.—p. 49.
Intra-Abdominal Omental Torsion: Report of Three Cases. G. C. Hederstad, Stockholm, Sweden.—p. 57.
*Splenectomy in Various Blood Disorders. W. D. Andrus and C. W. Holman, New York.—p. 64.
Method for Transplanting the Adrenal Gland of the Dog with Reestablishment of Its Blood Supply: Report of Observations. S. E. Levy and A. Blalock, Nashville, Tenn.—p. 84.
Renal Carbuncle: Case Report and Comparative Review. H. M. Spence and L. W. Johnston, Dallas, Texas.—p. 99.
*Efficacy of "Coley's Toxin" in Treatment of Sarcoma: Experimental Study. A. Brunschwig, Chicago.—p. 109.
Multiple Dentigerous Cysts, with Special Reference to Occurrence in Siblings. R. H. Ivy, Philadelphia.—p. 114.
Pulsating, Benign Giant Cell Tumors of Bone. G. B. Mider and J. J. Morton, Rochester, N. Y.—p. 126.
Treatment of Delayed Union and Nonunion of Fractures by Subcutaneous Drilling. R. A. Griswold, Louisville, Ky.—p. 135.

Localization of Intracranial Lesions.—Lewy determined the relationship of areas of hyperpathia of the scalp to the localization of intracranial tumors, abscesses, subdural hematomas, arachnitides and meningeal scar formations. He gives a survey of the type of lesions found in 100 patients and the location of the seventy-nine tumors. The result of these examinations showed a correlation between the location of the area of cutaneous hyperpathia and the accompanying intracranial lesion. The exact shape of the cutaneous areas varies in different cases, and the relationship of the zones of the scalp to the underlying intracranial process is an approximate one. Although the area of hyperpathia does not represent the exact location of the tumor, it gives a sufficient indication of the area at which the bone flap should be turned down. Statistics show that the majority of cerebral tumors exhibiting areas of hyperpathia of the scalp were tumors above, at or just below the surface of the brain, often involving the meninges directly or indirectly. One tumor, although deep seated, was accompanied by an area of hyperpathia. A possible explanation for this exception is that the middle cerebral artery was embedded in the tumor. In tumors of the cerebellum and of the sphenoidal ridge the localization could be outlined more accurately. The majority of the tumors of the posterior fossa affect in some way the cervical roots and cause a hyperpathia. However, deep-seated cerebellar tumors, producing traction on the tentorium, show, in addition or exclusively, a circular hyperpathia over the forehead or above the eyes. In tumors of the sphenoidal ridge, a careful sensory examination, including electrical methods, may help in determining whether the first division of the fifth nerve is involved or whether the lesion encroaches on the second and third divisions in the neighborhood of the foramen rotundum and foramen ovale. Such a differentiation may change the surgical approach. Brief histories of six cases illustrate the specific field of application of this method.

Splenectomy in Blood Disorders.—Andrus and Holman state that the value of splenectomy in congenital hemolytic jaundice, thrombopenic purpura and Banti's disease is well recognized, although the part played by the spleen in the production of these diseases is not clear. This will continue to be true until these diseases can be reproduced in animals. The results of splenectomy in these three diseases amply justify its use, but attempts to expand its indication beyond these have been attended almost uniformly by a considerably higher mortality and by disappointing results so far as cures are concerned. The authors report a series of fifty cases in which splenectomy was done. By removing the spleen in hemolytic jaundice only a portion of the cells responsible, but fortunately a sufficient portion to restore a more nearly normal balance between blood formation and blood destruction in most cases, is removed. There were no operative deaths in seventeen cases, but two patients have died since operation. Patients with definite thrombocytopenic purpura in the acute form are not good operative risks and this fact will deter surgeons from operating on them except as a last resort. Various medical measures, particularly repeated blood transfusions, may arrest the hemorrhage or even bring about an enduring remission of the disease in some cases and the injection of ascorbic acid is sometimes capable of producing remarkable improvement or remission. However, in many cases even these measures fail and but rarely produce the really spectacular results often seen following splenectomy. There were no deaths from the operation on twelve patients, although one patient died five months after operation with persistent thrombopenia and anemia. It is possible that the diagnosis was wrong and that she should have been classified as having aplastic anemia. All the remainder are well and have practically normal erythrocyte counts from six months to four and one-half years after operation. Splenectomy was performed in two cases of atypical hemorrhagic purpura, atypical in that thrombopenia was absent. In one, a boy of 14, who had had symptoms of hemorrhage, purpura and the development of ecchymosis from slight trauma for eight months, an excellent result was obtained. The other patient was a woman of 39 who had had similar symptoms for many years. During the year which has elapsed since her operation she has shown no improvement. The removal of the spleen in Banti's disease seems definitely warranted in the early stages and may alleviate some of the symptoms over a considerable period. The benefit which results would seem to be due to the reduction of the amount of blood coming to the liver through the portal vein which follows splenectomy. The operation is attended with certain risks. In many of the cases the platelets reach high levels after operation and thromboses are common. There were no operative deaths in eight cases, but one patient died two years after operation of progressing cirrhosis with ascites. The longest time which has elapsed since operation is three and one-half years. Two patients have suffered recurrence of hemorrhage. In four cases of erythroblastic (Cooley's) anemia there were no operative deaths, but two of the children have since died, one eight months and one two years after operation, of progressive anemia and pneumonia. The other two children are living three and one-half and four years after operation, but both have erythrocyte counts of slightly over 3,000,000 cells, and hemoglobin values around 50 per cent. The authors have performed splenectomy in three cases of true aplastic anemia, in one frankly as an experiment in a patient who was rapidly becoming worse. The course of the disease was not altered by the procedure. She died nine days after operation from continued bleeding from the gums and vagina and with progressing anemia. While the two other patients

appeared to derive temporary benefit, both suffered a relapse and died, one seven weeks and one ten months after operation. Splenectomy was also performed on a child with nonlipoid histiocytosis. The operation apparently alleviated somewhat the discomfort caused by the spleen and temporarily relieved the purpuric manifestations but did not arrest the progress of the disease. Splenectomy was also undertaken in a case of leukemia. The man survived the operation but was not improved, and at postmortem, four months later, leukemia was established. In one case characterized by weakness, anorexia and vague pains of the upper part of the abdomen the preoperative diagnosis was Banti's disease. Splenectomy was performed and the patient reacted poorly after operation and died eight hours later with hyperpyrexia. Postmortem examination revealed sarcoma which had involved the spleen, liver, pancreas, kidney and mesenteric nodes. Another operative fatality occurred in an Italian boy, aged 12, who had suffered from weakness, vague indigestion and frequent epistaxis for about six months. Following paracentesis the child became jaundiced, the anemia became more marked and the fluid reaccumulated rapidly. Splenectomy was undertaken as a last resort. The jaundice increased rapidly after operation and the patient died with cholemia three days later. The postoperative diagnosis was nodular cirrhosis.

Efficacy of "Coley's Toxin" in Sarcoma.—The effects of intraperitoneal injections of "Coley's toxins," of killed seven-day dextrose broth cultures of Streptococcus erysipelatis, Bacillus prodigiosus and Bacillus coli, were studied by Brunschwig on sarcomas of the subcutaneous tissues of rats, induced from the animals' own tissues by carcinogenic hydrocarbons. Transplanted neoplasms were not employed. No evidence of inhibition of the growth of the tumors was obtained. In a significant number of instances the tumors of injected animals exhibited a marked hyperemic and hemorrhagic reaction. It is assumed that this was a reaction to the injection of bacterial products, since such changes were not observed in control animals and were definitely of a different type, macroscopically, from the spontaneous degenerative changes sometimes observed in such neoplasms. These reactions, as indicated, did not appear to restrain the growth of the neoplasm.

Archives of Dermatology and Syphilology, Chicago

39: 1-194 (Jan.) 1939

Some Original American Contributions to Dermatology: President's Address. J. H. Mitchell, Chicago.—p. 1.
Cutaneous Eruptions Among Industrial Workers: Review of 2,000 Claims for Compensation. J. G. Downing, Boston.—p. 12.
Chronic Granuloma in Industrial Dermatology. H. E. Miller, San Francisco.—p. 33.
War Gases and Industrial Hazards in Their Manufacture. H. N. Cole, J. R. Driver, S. S. Bowen and G. Cooper, Cleveland.—p. 45.
*Industrial Dermatitis and Melanosis Due to Photosensitization. H. R. Foerster, Milwaukee, and L. Schwartz, New York.—p. 55.
Medicolegal Complications in Dermatology Caused by Massachusetts Workmen's Compensation Act. J. H. Blaisdell, Boston.—p. 69.
Ulcus Vulvae Acutum (Lipschütz), Associated with Typhoid Fever. C. Berlin, Tel Aviv, Palestine.—p. 89.
Are There Paradoxic Serologic Reactions in Syphilis? R. L. Kahn, Ann Arbor, Mich.—p. 92.
Hidradenitis Suppurativa; Abscess of the Apocrine Sweat Glands: Study of Clinical and Pathologic Features, with Report of Twenty-Two Cases and Review of Literature. H. A. Brunsting, Toledo, Ohio.—p. 108.
Tinea Nodosa of Scalp Hair in School Children of South Siam. W. H. Kneedler, Chieng Mai, Siam.—p. 121.
*Role of Sweat as a Fungicide, with Special Reference to Use of Constituents of Sweat in the Therapy of Fungous Infections. S. M. Peck, H. Rosenfeld, W. Leifer and W. Bierman, New York.—p. 126.

Industrial Dermatitis Due to Photosensitization.—Foerster and Schwartz observed that dermatitis and melanosis are common in industries in which tar and pitch are handled and that the preparations are important occupational hazards. These facts are not generally known in this country. More than 500 men were examined in four factories making electric conduits, more than half of whom had either melanosis or cutaneous lesions, chiefly dermatitis. The condition was confined to handlers of pitch or of pitch products, but those most intimately in contact with pitch were affected the least, while those who had the most severe dermatitis and the most intense pigmentation were outdoor workers. The pigmentation was diffuse and intense, considerably darker than ordinary sun tan, and it was confined to the surfaces exposed to sunlight. Pitch comedos and folliculitis on the face, neck, hands and forearms were commonly observed, and keratoses and papillomas were found occasionally. While some men were affected more severely than others, apparently none sufficiently exposed were immune. Tolerance with persistent pigmentation developed in some men, but most of them had to be rotated between various jobs and some were so hypersensitive that they could not be employed in the daytime but worked satisfactorily on night shifts. The pigmentation was not permanent but it persisted at least for several months after the workmen were no longer exposed. On the basis of their investigation the authors conclude that pitch dermatitis and melanosis are the products of true photosensitization resulting from exposure to specific spectral bands of light. These conditions do not appear to result from chemical contact sensitization of the type of dermatitis venenata or from allergic predisposition and commonly occur in previously normal skin of normal subjects. The photosensitization occurs through local exogenous activity of a specific photosensitizer. The authors believe that these photosensitizing radiations predominate in the short wavelengths of the sun's spectrum, chiefly between 3,900 and 5,000 angstroms. Reactions may be obtained in the midultraviolet portion of the spectrum, apparently only after prolonged exposure to rays of wavelengths longer than 2,500 angstroms. Their investigations failed to establish definitely one specific ingredient of pitch or coal tar as the photosensitizing agent in pitch melanosis and dermatitis. However, they believe that the dermatitis and melanosis probably result from photosensitization by different ingredients of coal tar, possessing different fluorescent spectrums from those involved in the production of epithelioma and epitheliomatous conditions.

Sweat as a Fungicide.—Peck and his collaborators studied the fungicidal power of human sweat and of its individual components. When this fungicidal power was established, an attempt was made to treat fungous infections by topical application of some of the ingredients, singly and in combination. The importance of such therapy does not lie in the fact that new and startling fungicidal agents are presented but in the fact that a more nearly physiologic approach to the therapy of fungous infections is proposed. According to their experiments, alkalized thermal sweat had no fungistatic property until concentrated. Dilute heat sweat obtained from a Negro boy and not alkalized was fungicidal at a p_H below 7. Analysis of samples of sweat revealed the presence of propionic, acetic, caprylic (caproic) and ascorbic acids, as well as traces of urea and of uric acid. The authors state that artificial sweat made according to their analysis and to those reported in the literature was fungicidal. The role of lactic acid in the fungicidal action of the sweat was demonstrated. Sebum found in the contents of sebaceous cysts was neither fungistatic nor fungicidal. The fungicidal properties of sweat are due to its content of acetic, propionic, caproic, caprylic, lactic and ascorbic acid. These substances must be present in the proper concentration to exert a fungistatic or fungicidal effect. There seems to be a relation between the localization of fungous infection and the distribution of sweat on the surface of the body. Areas which are exposed to the greatest concentration of sweat seem to have less tendency to fungous infection. Topical applications of ingredients of sweat, such as mixtures of lactic, propionic, butyric and ascorbic acid in proper concentrations, have proved valuable in the treatment of fungous infections.

Archives of Physical Therapy, Chicago

20: 1-64 (Jan.) 1939

*Effect of Ultraviolet and Visible Rays on Animal Septicemia. A. J. Nedzel and L. Pincussen, Chicago.—p. 5.
Therapeutic Value of Passive Hyperemia in Peripheral Vascular Disease. K. Harpuder and I. D. Stein, New York.—p. 9.
Iontophoretic Medication in Ophthalmology: Theoretical and Practical Aspects. G. Erlanger, New York.—p. 16.
Physical and Biologic Aspects of Short Wave Diathermy. A. Hemingway, Minneapolis.—p. 24.
Fractured Hips in the Aged: Improved Prognosis Through Physical Therapy. T. P. Brookes and F. H. Ewerhardt, St. Louis.—p. 29.
The Galvanic Vestibular Reaction. S. L. Shapiro, Chicago.—p. 35.

Animal Septicemia.—Nedzel and Pincussen studied the effect of ultraviolet and visible radiation on animals (white mice) infected with hemolytic streptococcus and irradiation of infected animals given bactericidal drugs for the purpose of studying their influence. One group of mice was not treated with any drug and another was given sulfanilamide mixed with food three

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days before the hemolytic streptococcus was injected. Both groups were irradiated daily three days before the injections and daily thereafter. Two different sources of light were used: the mercury in quartz with its intense ultraviolet and some visible lines and the carbon arc lamp with its continuous ultraviolet and visible spectrum. The death rate of the infected but not otherwise treated mice rose relatively fast. In five days about 40 per cent of the animals were dead. This mortality rate was counteracted by the effect of radiation, so that the percentage of deaths in those irradiated with quartz and carbon arc lamps dropped to 16 per cent. In the following days the death rate rose in all cases but less in the irradiated animals. The loss in weight of the surviving irradiated animals seemed to be higher in the beginning, but later they showed a better recovery. It is concluded that irradiation in these experiments has a beneficial effect. The animals given pitressin showed a favorable effect following irradiation. The death rate of mice infected with streptococci was cut in half irrespective of whether these were subjected to the mercury in quartz or carbon arc lamp. The loss in weight seemed a little greater in the carbon arc group. The few surviving nonirradiated animals did not show any loss of weight. Quartz lamp irradiation increased the death rate of the animals given sulfanilamide to a high degree, in contrast to the carbon arc spectrum, which did not depress the favorable sulfanilamide effect in the first few days. Later, however, the death rate is only about one half of that without irradiation. The effect of irradiation seems to be twofold: (1) physiologic effect on the blood vessels as in the pitressin experiments and (2) chemical effect, lessening the effectiveness of sulfanilamide.

Archives of Surgery, Chicago

38: 191-396 (Feb.) 1939

The Blood in Thrombo-Angiitis Obliterans. F. V. Theis and M. R. Freeland, Chicago.—p. 191.
*Serum Therapy for Streptococcic Infection of the Nose, Throat and Ear and Its Complications. Adele E. Sheplar, Martha Jane Spence and W. J. MacNeal, New York.—p. 206.
Squamous Cell Carcinoma of Renal Pelvis. C. C. Higgins, Cleveland.—p. 224.
Growth in Length of the Vertebrae. S. L. Haas, San Francisco.—p. 245.
Posterior Dislocation of Lower Femoral Epiphysis in Breech Delivery. M. S. Burman and M. J. Langsam, New York.—p. 250.
Endometriosis. H. C. Clark, Wichita, Kan.—p. 261.
Leiomyosarcoma of the Urinary Bladder. H. L. Kretschmer and P. Doerhing, Chicago.—p. 274.
Spinal Anesthesia: Regulation of Height with Fractional Doses. J. L. De Courcy, Cincinnati.—p. 287.
Fractures of the Upper Extremity and Shaft of the Humerus. J. H. Heyl, New York.—p. 295.
Onlay Bone Graft for Ununited Fractures. W. C. Campbell, Memphis, Tenn.—p. 313.
Oral Administration of Methylcholanthrene to Mice. J. Van Prohaska, A. Brunschwig and H. Wilson, Chicago.—p. 328.
Avulsion Fracture of the Great Trochanter. H. Milch, New York.—p. 334.
*Intestinal Obstruction Due to Gallstones: Report of Ten Cases. J. W. Dulin and F. R. Peterson, Iowa City.—p. 351.
Consequences of Instrumental Dilation of the Papilla of Vater: Experimental Study. C. D. Branch, O. T. Bailey and R. Zollinger, Boston.—p. 358.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. Von Lichtenberg, Budapest, Hungary; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Conor, Chicago.—p. 372.

Serum Therapy for Streptococcic Infections.—Sheplar and her associates treated thirty patients suffering from severe hemolytic streptococcus infection of the nose, ear or throat with streptococcus serum. Four of these cases were complicated by meningitis and in fifteen the blood yielded bacteria on culture. Three different kinds of streptococcus serum were used, together with other therapeutic measures (transfusions, sulfanilamide and bacteriophage in certain instances). There were seven deaths. Generalized meningitis with streptococci recognizable in the spinal fluid was present before serum therapy was initiated in three of the fatal cases. The authors have no evidence to indicate that established diffuse streptococcic meningitis can be controlled by the serum that they employed. In only one instance was there recovery after definite evidence of meningitis, and in this case, although the spinal fluid was clouded with abundant leukocytes, culture failed to disclose the presence of streptococci in it. The other four deaths occurred in patients with streptococcic bacteremia but without meningitis. Among the twenty-three successful cases, streptococcic otitis media developed in two debilitated patients under treatment for staphylococcic osteomyelitis. One of the patients received serum, and the other received serum and sulfanilamide. There were two patients with mediastinitis and one with streptococcic empyema following pneumothorax for active pulmonary tuberculosis. In all three of these the activity of the streptococcus was adequately controlled. Two patients had streptococcic pneumonia complicated by voluminous empyema. One patient presented the classic symptoms and signs of septic thrombosis of the cavernous sinuses in the presence of a positive infection of the blood stream with hemolytic streptococci. Sulfanilamide, serum and bacteriophage all were brought into play in this case, with a successful outcome, apparently unique. The difficulties and dangers in the use of streptococcus serum are serious. For this reason streptococcus serum probably should not be used for streptococcic infections of moderate severity, which may be adequately controlled by the oral administration of sulfanilamide. When, however, a really grave situation arises in a case of streptococcic infection the proper use of the serum is definitely indicated. Certainly in the all too frequent streptococcic infections of the nose, throat, ear and mastoid the use of sulfanilamide or of serum or a combination of the two may be expected to control the infection and to obviate the necessity of surgical intervention.

Intestinal Obstruction Due to Gallstones.—In the experience of Dulin and Peterson intestinal obstruction due to gallstones occurs with sufficient frequency to make it an important consideration in the diagnosis of acute abdominal conditions. This is particularly true when the patient has previously had typical attacks of gallstone colic. Also this type of obstruction may occur in a patient who has never had such an attack. The factors which make clinical diagnosis difficult are the similarity of the symptoms to those of an acute attack of gallstone colic and the lack of early physical or laboratory studies which would positively indicate the nature of the condition. In the authors' series of ten cases only three such diagnoses were made preoperatively. In one case a diagnosis depended on the disappearance of previously palpable stones in the gallbladder; in another a stone produced a negative filling defect in a flat teleroentgenogram. The diagnosis was made in only one case which presented the classic history of previous biliary colic followed by a sudden development of symptoms of acute intestinal obstruction. The authors believe that greater awareness of this condition and the more frequent use of the teleroentgenogram will aid in making not only more frequent preoperative diagnoses but earlier ones. While the teleroentgenogram may show only evidences of fluid levels within a dilated intestine, this observation is uncommon except when it is associated with paralytic ileus or mechanical obstruction. Diabetes mellitus was present in three of the ten cases. In two the diabetes was severe. In no instance, however, was it shown to contribute to the condition produced by the obstructing gallstone.

California and Western Medicine, San Francisco

50: 1-80 (Jan.) 1939

Problems in the Diagnosis of Acute Appendicitis. T. O. Burger and H. C. Torbert, San Diego.—p. 7.
Radiation Therapy in Acute and Chronic Inflammatory Conditions. H. J. Ullmann, Santa Barbara.—p. 11.
Pruritus Ani. C. R. Caskey, Los Angeles.—p. 14.
*Renal Function in the Aged. L. D. Huffman, Hollywood.—p. 16.
Medical-Economic Problems. H. W. Sawyer, Fallon, Nev.—p. 20.
Tuberculosis in San Quentin. L. L. Stanley, San Quentin.—p. 23.

Renal Function in the Aged.—Huffman determined the renal function of sixty-seven persons 70 or more years of age. Serious degrees of impairment of renal function is not necessarily an accompaniment of old age. True nephritis was rare in the present group of subjects and, while slight degrees of nitrogen retention were not unusual, the classic picture of uremia was infrequent. The data indicate the frequent association of renal impairment and prostatic hypertrophy. Twelve of fourteen male school teachers had some palpable enlargement of the prostate. The gradations from a symptomless enlargement to complete obstruction may be almost imperceptible. When evi-

dence of renal impairment exists in the male it is obligatory to rule out obstructive uropathy before a diagnosis of true nephritis is made. The presence of albumin and casts and fixation of specific gravity of the urine in either sex clearly indicates that other functional tests should be employed before any conclusions are drawn regarding the renal status. There is usually adequate function if the excretion of phenolsulfonphthalein approaches 40 per cent in the first fifteen minute specimen and 60 per cent in the two hour specimen. Likewise, when the value of the urea clearance test in percentage of normal is 70 or more, good renal function is usually present. When values of urea clearance are 50 per cent of normal, some impairment is present and values from 50 to 70 per cent should be considered doubtful and other tests of renal function employed. When clearance studies show values less than 25 per cent, a dangerously low level has been reached in the aged person. The level of the nonprotein nitrogen of the blood may be of significance in showing renal impairment. Elevated values are regularly found when the urea clearance is 20 per cent of normal. It is difficult to analyze the factor of blood pressure as related to renal function in the aged. It is probable that vascular narrowing in the renal bed, incident to advancing years, necessitates a physiologic increase in the general blood pressure to facilitate the work of the kidney.

Canadian Public Health Journal, Toronto

30: 1-68 (Jan.) 1939

Lay Pioneers in the Common Health. H. Rolleston, Haslemere, Surrey, England.—p. 1.
Nutrition in Toronto. E. W. McHenry, Toronto.—p. 4.
The Motor Vehicle Accident Problem. A. H. Rowan, Toronto.—p. 14.
The Junior Red Cross: "An Idea Whose Time Has Come." Jean E. Browne, Toronto.—p. 20.

Florida Medical Association Journal, Jacksonville

25: 317-368 (Jan.) 1939

Presacral Nerve Resection for Relief of Pelvic Pain. J. R. Boling, Tampa.—p. 331.
Some Observations on Fractures of the Hip. C. B. Mabry, Jacksonville. —p. 334.
Management of the Diabetic Patient: Case Reports. G. H. Garmany, Havana.—p. 337.
Brief Remarks on Malaria. J. B. Pomerance, Miami Beach.—p. 341.

Johns Hopkins Hospital Bulletin, Baltimore

64: 1-82 (Jan.) 1939

Spontaneous Mediastinal Emphysema. L. Hamman, Baltimore.—p. 1.
Generalized Torula Infection: Case Report and Review with Observations on Pathogenesis. W. P. Longmire Jr. and T. C. Goodwin, Baltimore.—p. 22.
Granulomatous Myocarditis. A. F. Jonas Jr., Baltimore.—p. 45.
*Preliminary Report of the Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever. Caroline Bedell Thomas and R. France, Baltimore.—p. 67.

Prophylactic Use of Sulfanilamide in Rheumatic Fever.—Thomas and France carried out studies to ascertain whether sulfanilamide might prevent the occurrence of rheumatic recrudescences in susceptible patients by controlling the antecedent streptococcic infections. Thirty patients were chosen from the Cardiac Clinic of the Department of Medicine of Johns Hopkins Hospital. During the first winter, 1936-1937, the entire group were given sulfanilamide. Actually, eighteen of those chosen proved cooperative and the remaining seven afforded a control series. During the winter of 1937-1938 nineteen patients received sulfanilamide; seven of these had been in the original treated group. Twelve new controls were added and the eleven patients who received treatment the first winter, but not the second, formed a control group of a different type. The ages of the patients ranged from 14 to 36 years. Fifteen grains (1 Gm.) of sulfanilamide daily divided into three doses was prescribed from November 1936 to June 1937. During the second winter the dose was increased to 20 grains (1.3 Gm.) daily divided into two doses and was given from October 1937 to June 1938. None of the patients had a major attack of acute rheumatic fever or an acute beta hemolytic streptococcus infection while taking sulfanilamide. Five major attacks of rheumatic fever developed in four of the thirty control patients during the same period, one was hospitalized because of an acute beta hemolytic streptococcus infection and three others had acute illnesses which might have been of a rheumatic character. The group studied is too small to permit definite conclusions, but the authors believe that their results are encouraging and warrant further investigation.

Journal of Bacteriology, Baltimore

37: 1-110 (Jan.) 1939. Partial Index

Comparative Resistance of Recently Isolated and Older Laboratory Strains of Eberthella Typhosa to the Action of Chloramine. P. Kabler, G. O. Pierce and G. S. Michaelsen, Minneapolis.—p. 1.
Nitrogen Metabolism of Certain Coliform Bacteria. P. L. Carpenter, Madison, Wis.—p. 11.
Implantation of Oral and Intestinal Strains of Lactobacillus Acidophilus in the Albino Rat. M. J. Pelczar Jr. and L. A. Black, College Park, Md.—p. 51.
Study of Hemorrhagic Septicemia Pasteurellae. C. T. Rosenbusch and I. A. Merchant, Ames, Iowa.—p. 69.

Kansas Medical Society Journal, Topeka

40: 1-44 (Jan.) 1939

Diabetic Emergencies and Their Treatment. A. Marble, Boston.—p. 1.
Pellagra in Kansas. D. V. Conwell and L. W. Hatton, Halstead.—p. 6.
Few Observations in Forty-Nine Cases of Epidemic Parotitis. E. R. Schwartz and M. W. Husband, Manhattan.—p. 10.
Paralytic Ileus. W. Cox, Wichita.—p. 12.
Convulsive Shock Therapy in Involutional Psychoses. G. W. Robinson Jr., Kansas City, Mo.—p. 14.
Transfusion of Types 1, 2 and 4 Blood into a Type 1 Recipient. M. A. Walker, Marie Carr, Kansas City, and G. A. Pearson, De Soto.—p. 15.
Intestinal Obstruction Due to Submucosal Hematoma of the Jejunum in the Newborn. R. P. Smith, Kansas City.—p. 16.
Oil Soluble Anesthetics in Treatment of Anal Fissure. L. A. Smith, Topeka.—p. 17.

Michigan State Medical Society Journal, Lansing

38: 1-88 (Jan.) 1939

*Diagnosis of Pyuria in Childhood and Its Treatment with Mandelic Acid and Sulfanilamide. H. F. Helmholz, Rochester, Minn.—p. 17.
Treatment of Impotence. E. W. Hirsch, Chicago.—p. 21.
Treatment of Compound Injuries, with Particular Reference to the Hand. S. L. Koch, Chicago.—p. 27.
Treatment of Some Common Diseases of the Skin. H. Fox, New York.—p. 32.
Poliomyelitis in Kent County: Statistical Summary. W. Dixon and C. Frantz, Grand Rapids.—p. 36.
The Bone Marrow from a Clinical Diagnostic Point of View. L. D. Stern, Detroit.—p. 38.
Some Remarks on Experimental Psychology of the Kraepelin School. E. Amberg, Detroit.—p. 43.
Submaxillary Stones: Case Report. J. B. Blashill, Detroit.—p. 46.
Posterior Vaginal Enterocele: Report of Two Cases. E. G. Krieg, Detroit.—p. 47.
Résumé of Quinidine Sulfate Therapy. E. E. Hammonds, Birmingham. —p. 49.

Pyuria in Childhood.—Helmholz states that sulfanilamide acts best in an alkaline urine. It is well to give from 10 to 15 grains (0.65 to 1 Gm.) of sodium bicarbonate three times a day with the sulfanilamide in order to prevent acidosis. The dose of sulfanilamide that he has found to be sufficient in most cases of pyuria in childhood is 10 grains to 20 pounds (9 Kg.) of body weight; if necessary the dose may be increased to 15 grains, as recommended by Long in the treatment of streptococcic infection. For short periods the dose may be increased to 20 grains (1.3 Gm.) to 20 pounds of body weight. It is possible further to increase the urinary concentration of sulfanilamide without increasing its concentration in the blood by cutting down on the intake of fluids. The administration of large amounts of fluids and alkalization of the urine have been the standard treatment in acute cases of pyelitis, especially in infancy. In addition to this routine treatment, sulfanilamide can be given advantageously every four hours in the foregoing dosage. With the addition of sulfanilamide to the scheme of treatment the acute symptoms, high fever and restlessness may disappear at an earlier time than usual. Administration of the drug should be continued in the same dosage until there is no evidence of bacterial growth in a culture of the urine and continued for from four to six days after the urine has become sterile. If, at the end of a week, the urine on culture is still sterile one may be quite certain that the patient has been cured. If the urine again shows bacteria, it must be assumed that bacterial growth in the urine was merely inhibited and that further treatment is necessary. Instead of 10 grains, 15 grains of sulfanilamide to 20 pounds

of body weight should be tried and the same process repeated. It is advisable in such cases to continue the same dosage for from eight to ten days after the first culture of sterile urine is obtained. Four days after discontinuation of the medication, the urine should be checked again. The same procedure is carried out in cases of subacute and chronic infections, with the exception that no effort is made to force fluids. A rapid recovery from both acute and chronic infections is likely when the infecting organism is a gram-negative bacillus, Escherichia coli, Aerobacter aerogenes, Salmonella, Proteus vulgaris or Proteus ammoniae. The same applies to staphylococcic infection of the lower portion of the urinary tract. The excellent results obtained in treating infections with the bacillus Proteus ammoniae (encrusted cystitis) should be emphasized because it, in particular, has been resistant to methenamine and mandelic acid therapy and to the ketogenic diet. Since the author has used sulfanilamide it has become evident that Streptococcus faecalis is a much more frequent invader of the urinary passages than he had formerly realized. How frequently mixed infections occur should become evident with the continued use of sulfanilamide. If there are many, the success of sulfanilamide therapy will be decreased and this will necessitate treatment by means of a combination of sulfanilamide and mandelic acid. In the treatment of urinary infections by means of mandelic acid it is advisable to continue treatment for three or four days after a culture of urine has become sterile. Administration of the drug may then be discontinued and, after another interval of three or four days, the culture should be repeated; a sterile culture then indicates cure. Treatment by means of sulfanilamide is easier to carry out than is treatment by the ketogenic diet, methenamine or mandelic acid. It is successful in urine which is alkaline because of urea-splitting organisms, and it is successful in conditions in which the function of the kidney is reduced. Sulfanilamide is of no value in the treatment of infections with Streptococcus faecalis. Mandelic acid is of value in the treatment of all infections in which the urinary acidity can be reduced below 5.5 and the drug excreted in a concentration in 0.5 per cent.

Military Surgeon, Washington, D. C.

83: 483-570 (Dec.) 1938. Partial Index

A Guide to Spinal Anesthesia. W. W. Nichol.—p. 525.
Inactive Duty Training Course for Medical Reserve Officers. G. P. Grabfield.—p. 533.
The Divisional Medical Service, with Special Reference to the National Guard and Army Maneuvers. E. S. Linthicum.—p. 536.
Eosinophilic Bodies in the Blood of Mumps. H. H. Parsons.—p. 541.
Evacuation of Casualties in Time of War. K. J. Swenson.—p. 544.

Minnesota Medicine, St. Paul

22: 1-70 (Jan.) 1939

The Treatment of the Common Cold in Infants and Children. R. L. J. Kennedy, Rochester,—p. 1.
*Exposure of the Body to Unequal Temperature: Factor in Pneumonia. C. W. More, Eveleth.—p. 4.
*Autogenous Streptococcus Vaccines in Treatment of Allergic Conditions, with Special Reference to Their Use in Bronchial Asthma: Report of Cases. R. S. Ylvisaker, Minneapolis.—p. 6.
Acute Mastoiditis. J. G. Parsons, Crookston.—p. 12.
The Problem of Gastroduodenal Hemorrhage. A. M. Snell, Rochester.—p. 15.
Heart Disease in Pregnancy. J. F. Borg, St. Paul.—p. 24.
Foreign Bodies in Cornea: Care and Complications. W. T. Wenner, St. Cloud.—p. 28.

Exposure of Body to Unequal Temperature.—More has noticed that many typhoid patients and children with pneumonia were those occupying beds or cribs placed so that the temperature on either side was uneven. For example, one side of the bed was next to a window with a source of heat coming from the other side. So emphatically was it impressed on the author that unequal temperature is an etiologic factor in pneumonia that, when building a small hospital, he had the windows and doors to the rooms and wards placed opposite each other, leaving ample wall space for beds without exposing the patients to unequal temperature. Pneumonia has never developed in patients entering the hospital early with typhoid and free from lung complications. At one time during an epidemic of typhoid the hospital ward was overcrowded and a patient occupying a bed next to a wall 22 feet from a double window was observed to be coughing. While examining the patient, the author distinctly felt a draft of air on the back of his head and neck. There was a breeze coming through the top of the windows 22 feet away and was directed toward the ceiling by a contrivance at the top. The wind followed the ceiling and continued down the wall where the patient was. His position was immediately changed and he recovered promptly. The author has a patient who will sneeze if he leaves a warm room and walks outside while a cool breeze is blowing, and his nose will begin to discharge. But if he will turn round so that all parts of his chest are cooled equally, this condition soon stops. Some people are more susceptible to this unequal temperature than others. In children with pneumonia whose parents can not or will not protect them from unequal temperature, the pneumonia jacket, frequently changed, is most useful, chiefly it is believed because it maintains an equal temperature. Those advocating cold fresh air for children with pneumonia place them in cold rooms. Here the patient gets the benefit of the fresh air without exposure to unequal temperature. The author concludes that exposure of the body to unequal temperature is a predisposing etiologic factor in pneumonia as well as the cause of so-called "colds in the head," coryza, tonsillitis, pharyngitis and the like.

Vaccines in Treatment of Allergy and Asthma.—Ylvisaker used autogenous streptococcus vaccines in the treatment of bacterial or infectious types of allergy (including fourteen cases of bronchial asthma, four of allergic rhinitis and one each of recurrent sinusitis, generalized eczema, chronic urticaria, conjunctivitis and iritis). The initial dose of vaccine varied from 25,000 to 100,000 organisms. Injections (fifteen intravenously and eight subcutaneously) were given from every three to five days. As the patient improved, the interval was lengthened to from five to seven days. The size of the dose was gradually increased until definite improvement was noted. No further increase was made as long as improvement or relief of symptoms was maintained. Any reaction following a dose called for a marked reduction in the next dose. If possible, the injections were continued over a period of at least six months so as to prevent recurrences. In several cases they have been continued for periods of from two to three years, with occasional rest periods of from six to eight weeks. Seventeen of the twenty-three patients treated obtained complete or nearly complete relief. Three cases of bronchial asthma failed to improve. The beneficial effects produced by the minute doses are probably due not to a foreign protein shock therapy but rather to a specific type of desensitization. The intravenous route of administration produces more prompt and precise results than the subcutaneous route. Severe reactions may be expected following intravenous administration if too large doses are used or too long an interval is allowed to elapse between doses. The beneficial effects of vaccines in allergic states, especially asthma, are not confined to the primary bacterial allergies but may also be of value in certain cases in which bacterial allergy is secondary.

New England Journal of Medicine, Boston

220: 1-42 (Jan. 5) 1939

The Teaching of the Medicosocial Aspects of Cases. G. P. Reynolds, Boston.—p. 1.
Thyroid Surgery at a Large Municipal Hospital. R. C. Cochrane, Boston.—p. 7.
*Electrocardiographic Changes in Vitamin B_1 Deficiency. C. C. Dustin, H. Weyler and C. P. Roberts, Providence, R. I.—p. 15.
Jacket for the Treatment of Scoliosis. H. G. Lee, Boston.—p. 22.
Hodgkin's Disease and Allied Disorders. H. Jackson Jr., Boston.—p. 26.

220: 43-84 (Jan. 12) 1939

A National Health Program. W. F. Draper, Washington, D. C.—p. 43.
The Changing Private Practice of Medicine. R. I. Lee, Boston.—p. 47.
The Chemistry of the Anaerobic Recovery of Muscle. O. Meyerhof, Heidelberg, Germany.—p. 49.
The Vitamin C Status of Diabetic Patients. Vilma Sebesta, Rachel M. Smith, Alison T. Fernald and A. Marble, Boston.—p. 56.
Cystocele Repair: Factors Which Necessitate Changes in the Usual Procedure, with Suggested Technics. J. R. Miller, Hartford, Conn.—p. 61.
The Fat Soluble Vitamins. A. P. Meiklejohn, Boston.—p. 67.

Electrocardiogram in Vitamin B_1 Deficiency.—Dustin and his associates discuss six male patients with histories of unbalanced diets and clinical evidence of vitamin B_1 deficiency. All these patients showed abnormal electrocardiograms. They gave a history of the habitual use of alcoholic beverages,

usually beer, and concurrently a deficient diet. All entered the hospital because of swelling of the legs and some dyspnea. Two also had swelling of the abdomen. Only one patient complained of substernal discomfort. All but one patient received a diet high in vitamins and all received vitamin B_1 medication. In two the cardiac sounds showed notable changes with treatment; in one of these a gallop rhythm disappeared soon after entrance. In three there was a marked reduction in the size of the heart as treatment progressed. Only one patient had definite anemia, hypochromic in type, and this responded to treatment during the hospital stay. All patients lost from 8 to 28 pounds (3.6 to 12.7 Kg.) concurrently with the reduction of the edema. Only one patient received digitalis in addition to vitamin therapy. Electrocardiograms at rather close intervals were taken of each patient while he was under treatment. The common features seen on admission were increase in the electrical systole, according to Bazett's formula, a rapid rate and a tendency to low voltage, and in most cases a flattening of the T wave in leads 1, 2 and 3. The chest leads showed the least tendency to become abnormal. Subsequent records during treatment showed a slowing of the rate, an increase in the voltage and varying changes in the ventricular complexes. The changes in the ventricular complexes during treatment usually occurred within a few days. As treatment progressed, during the first week or two the electrocardiograms became more abnormal and then tended to return toward normal. The abnormal ventricular complexes changed more rapidly than would be expected in coronary disease. The changes in the T waves, as described, may be caused by several conditions; therefore it is necessary in interpreting electrocardiograms to know the existent clinical conditions.

Northwest Medicine, Seattle

38: 1-36 (Jan.) 1939

Differential Diagnosis and Treatment of Diseases Associated with Enlargement of Spleen or Lymph Nodes. E. E. Osgood, Portland, Ore.—p. 6.
*Allergy in Infants: Significance of First Allergic Manifestations. N. W. Clein, Seattle.—p. 9.
Bronchopneumonia of Mild Severity at University of Oregon. F. N. Miller and Marian G. Hayes, Eugene, Ore.—p. 12.
*Prevention of Recurring Herpes. E. V. Ullmann, Portland, Ore.—p. 15.
Strangulated Hernia with Acute Hemorrhagic Infarction of Testicle in Infants. M. S. Rosenblatt and W. H. Bueermann, Portland, Ore.—p. 18.
Coccidioidal Granuloma. K. E. Hynes, Sedro Woolley, Wash.—p. 19.
Massive Gastrointestinal Hemorrhage. T. T. Manzer, Seattle.—p. 21.
Disabling Complications of Scabies. S. D. Allison, Portland, Ore.—p. 23.

First Allergic Manifestations in Infants.—Clein observed 100 allergic and 100 nonallergic infants, from private practice, from birth to 4 or 5 years of age. The feedings, examinations and observations were uniform in all infants. Seventy-one per cent of the allergic infants had allergic parents; 12 per cent of the nonallergic. Of the allergic infants 78 per cent showed some allergic symptoms before 4 months of age, 91 per cent by 1 year and 100 per cent by 2 years as follows: (1) rash (eczema) in eighty-five cases, occurring chiefly on the face, (2) vomiting (pylorospasm) in twenty-four and (3) colic (abdominal pain, gas or diarrhea) in sixteen. One or more of these symptoms were frequently present at the same time. The author suggests that egg yolk should not be added to the diet of allergic infants too early, as many are sensitized through the mother's milk or inherit the sensitivity. Specific attention to the diet and the environmental factors during childhood may prove to be important prophylactic measures in preventing or minimizing the major allergic diseases.

Prevention of Recurring Herpes.—Ever since his experiments with laryngeal papilloma and warts (1920-1923) Ullmann has wondered about the odd phenomenon that laryngeal papilloma, as well as most forms of warts, disappear at some time without any therapy. Warts and laryngeal papilloma are classed as diseases due to a filtrable virus and show histologically inclusion bodies, as do all forms of herpes. The author cites four cases of recurring herpes which ceased to recur after vaccination for smallpox. He is at a loss as to whether this is a phenomenon of immunization or one of suggestion.

Southwestern Medicine, El Paso, Texas

23: 1-34 (Jan.) 1939

The Family Physician as a Public Health Agent. M. K. Wylder, Albuquerque, N. M.—p. 1.
Diaphragmatic Hernias of Various Types: Diagnosis and Surgical Treatment in 161 Cases. S. W. Harrington, Rochester, Minn.—p. 3.
Differential Diagnosis of Low Back Pain. A. Steindler, Iowa City.—p. 7.
X-Rays in the Diagnosis of Early Pulmonary Tuberculosis. R. E. Porter, Fort Stanton, N. M.—p. 9.
Early Diagnosis and Radical Treatment of Gastric Carcinoma. E. P. Palmer, Phoenix, Ariz.—p. 10.
Syphilitic Endocarditis of the Mitral Valve: Case Report. W. W. Waite, El Paso, Texas.—p. 13.
*Diabetic Manifestations in Ophthalmology. W. J. Smith, Phoenix, Ariz.—p. 14.
Regional (Terminal) Ileitis. C. N. Ploussard and M. G. Kelly, Phoenix, Ariz.—p. 18.

Diabetic Manifestations in Ophthalmology.—Smith discusses some of the ocular manifestations of diabetes. One of the more rare manifestations is that of lipemia retinalis. Moore of London states that he has not seen such a case since the introduction of insulin. Retrobulbar neuritis is usually found in older persons, is characterized by a small central scotoma and usually responds to treatment. If the condition is allowed to progress there may be some resulting atrophy. Iritis demonstrates the lack of resistance to infection which diabetic patients show. There are more often changes in the pigment cells on the posterior surface of the iris. They become swollen, thus throwing the iris into more prominent folds. The cells often become detached and may be found on the anterior surface of the lens. The majority of so-called diabetic cataracts are nothing more than ordinary senile cataracts developing in patients with diabetes. The true diabetic cataract is found in young persons, is bilateral and develops rapidly. It is characterized by flaky lesions which develop faster in the posterior layers of the cortex. Senile cataracts tend to develop earlier in diabetic than in nondiabetic persons. Likewise retinitis is somewhat similar in that in the vast majority of cases in which it develops there is usually associated a raised blood pressure, vascular disease and albumin in the urine. Often it is difficult to state from ophthalmoscopic appearances whether a given case of retinitis is due to diabetes, nephritis or arteriosclerosis. Wolfe states that there are certain characteristics of a true diabetic retinitis: 1. It rarely occurs in a young subject. 2. The patches of retinal exudate tend to have sharply defined edges, are distributed in an irregular manner and sometimes form an irregular ring around the macular region. 3. Small dark round retinal hemorrhages are suggestive of diabetes. As such they lie in the deeper layers of the retina. With regard to prognosis, Nettleship found that of forty-eight patients with diabetic retinitis 60 per cent lived for more than two years. Thus it is an indication of some gravity but is not as serious a sign as retinitis in renal disease. Hemorrhage is more apt to follow surgery of the eye in a diabetic than in a nondiabetic person. Changes in refraction are common. The exact mechanism for this is not known, but it may be due to an alteration of the osmotic pressure in the aqueous humor. This in turn causes an altered index of refraction of the lens cortex. It may cause myopia in some cases while in others hyperopia may develop. It may appear shortly after the beginning of insulin therapy. The author cites such a case.

Yale Journal of Biology and Medicine, New Haven

11: 165-276 (Jan.) 1939

Effect of Estrogenic Hormone and Ovariectomy on the Normal Antibody Content of the Serum of Mature Rabbits. L. Weinstein, New Haven, Conn.—p. 169.
The Practical Application of Modern Pelvimetric Methods. H. Thoms and H. M. Wilson, New Haven, Conn.—p. 179.
Note on the Lack of Carcinogenic Action of Some Cardiac Glucosides and Saponins. P. K. Smith and W. U. Gardner, New Haven, Conn.—p. 187.
Notes on the Materia Medica of Nathan Smith. B. A. Smith, New Haven, Conn.—p. 189.
Synergistic Effect of Heptyl Aldehyde and Methyl Salicylate on Spontaneous Tumors of the Mammary Gland in Mice. L. C. Strong, New Haven, Conn.—p. 207.
History of the Terrible Epidemic, Vulgarly Called the Throat Distemper, as It Occurred in His Majesty's New England Colonies Between 1735 and 1740. E. Caulfield, New Haven, Conn.—p. 219.

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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian J. Exper. Biol. and M. Science, Adelaide

16: 275-370 (Dec.) 1938. Partial Index

Salt Optima in Agglutination. A. E. Platt.—p. 275.
Case of Relapse in Experimental Poliomyelitis. W. G. Heaslip.—p. 285.
*Vitamin C Nutrition and Susceptibility to Diphtheria as Possible Factors in Epidemiology of Poliomyelitis. W. G. Heaslip.—p. 287.
Variations in Behavior of Paretic Cerebrospinal Fluids with Different Types of Gold Sols. S. W. Pennycuick, C. E. Woolcock and R. J. Cowan.—p. 315.
Synthesis of Acetycholine by Brain Tissue. E. R. Trethewie.—p. 343.

Vitamin C and Poliomyelitis.—Heaslip states that toward the end of 1937 an epidemic of poliomyelitis began in South Australia. A number of the earlier cases occurred in an area of a city in which immunization against diphtheria had been carried out previous to the epidemic, and Dwyer observed that the majority of the cases of poliomyelitis occurred in children nonimmunized to diphtheria. Immunization had been carried out without previous Schick testing. In 1937 Jungeblut reported that vitamin C had a therapeutic effect when injected subcutaneously into monkeys inoculated with the virus of poliomyelitis. A review of the literature on susceptibility to diphtheria and to poliomyelitis showed in each case a correlation with the results of certain experimental work with vitamin C. In 1917 Zingher reported that a positive reaction to the Schick test was given in a disproportionately large percentage of cases of poliomyelitis. Comparing the patients with poliomyelitis who were not immunized to diphtheria with the controls, the author finds that the age group of 12 years and over gives substantially the same percentage of positive Schick reactions as the control group. This is possibly the most extraordinary result obtained, as this age group contains 42 per cent of the patients and their ages range up to 60 years; 30 per cent of them are 21 years or more of age. Admitting that some of these are rural dwellers, the figure is still high in a state in which diphtheria is moderately prevalent. The same may be said of the whole group, especially when it is considered that fewer than a third of the patients are less than 6 years of age. Of the 238 patients tested twenty-one had been artificially immunized and nine had had diphtheria. Eight of these thirty gave a positive reaction to the Schick test. In a control group of 359 persons, of whom four had had diphtheria and 355 had been artificially immunized, only two gave a positive Schick reaction. One of these had received only 0.5 cc. of anatoxin and the other only 1 cc. The author is tempted to suggest that the latter result is due to the fact that those who remained Schick positive after immunization contracted poliomyelitis. These figures support the idea of a constitutional defect underlying susceptibility to the two diseases, and it is not surprising to learn that several of the patients with poliomyelitis have, within a few months, contracted diphtheria despite immunization. Dwyer has reported that few of these immunized patients contracted poliomyelitis. This contrasts sharply with the report of Henry and Johnson that 51 per cent of their patients with poliomyelitis had been previously immunized. The explanation is probably that Dwyer's group was immunized without previous Schick testing; that is to say, many of them did not require it, whereas it is justifiable to assume that all of the latter group were Schick positive prior to immunization. From these results, supported as they are by Zingher's observations on a much larger group, it is evident to the author that there is a greater susceptibility to poliomyelitis in persons giving a positive Schick reaction than in those who give a negative reaction. Conversely there is a larger percentage susceptible to diphtheria among those who contract poliomyelitis than in the normal population. The urinary excretion of vitamin C from various groups of infected and noninfected persons has been estimated and the conclusion is drawn that, while the usual sequence of events is a decreased excretion of vitamin C following infection, it is probable that a low level of vitamin C nutrition predisposes to infection and severity of attack. It is probable that there is a relationship between nutrition and the age incidence in this disease.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

45: 893-1066 (Dec.) 1938

William Blair-Bell Memorial Lecture: Uterine Inertia. T. N. A. Jeffcoate.—p. 893.
*Production of Uterine Hemorrhage in the Normal Cycle and in Amenorrhea Through Progesterone. B. Zondek and S. Rozin.—p. 918.
Study of Abortion Sequences. P. Malpas.—p. 932.
Interpretation of Radiologic Pelvimetry. C. Nicholson.—p. 950.
*Puerperal Cervicitis: Observations Based on a Series of Eighty-Two Cases Treated at Queen Charlotte's Hospital. H. Arthure.—p. 985.
Study of Placental Site and Intra-Uterine Relation by Original Method of Amniotic Sac Distention: Report of 144 Cases. R. Torpin.—p. 993.
Some Aspects of the Pathology of Uterine Fibromyomas During Pregnancy. C. P. Charlewood.—p. 999.
Surgical Treatment of Carcinoma Cervicis Uteri by the Radical Vaginal Method. S. Mitra.—p. 1003.
Subacute Puerperal Inversion Treated by Aveling's Repositor: Case. R. J. Kellar.—p. 1013.
Simple Breast-Reliever Pad. H. Willcox.—p. 1017.

Production of Uterine Hemorrhage by Progesterone.—Zondek and Rozin learned that if progesterone is administered to normally menstruating women for five days during the postmenstrual stage (seventh to twelfth day of the cycle) bleeding of several days' duration occurs after an interval of sixty hours on the fourteenth day of the cycle. Since the uterine mucosa in this stage does not show any of the secretory stage or only the beginning of it, this hemorrhage can be looked on as pseudomenstruation. The normal ovarian cycle need not be disturbed by this event. If progesterone is administered at the time of the follicular rupture, at a moment when the patient has her own corpus luteum, bleeding either does not occur at all or there is a hemorrhage from a mucous membrane already developed into the premenstrual stage. In this case precocious menstrual bleeding can be induced. The authors also observed that treatment with progesterone for five days can produce hemorrhage in secondary amenorrhea without preliminary treatment with estrogenic substance. In primary amenorrhea, however, such treatment fails. Since it had become evident that progesterone could induce hemorrhage in the normal as well as in the disturbed ovarian cycle, the authors tried to initiate hemorrhage during pregnancy in order to bring about therapeutic abortion in this way. They used doses of from 50 to 150 mg. of progesterone. Bleeding, however, did not occur and pregnancy continued.

Puerperal Cervicitis.—Arthure states that it is of great importance to treat cases of cervicitis early, before the lesion has become chronic and deep seated. The infection is due to a nonhemolytic streptococcus but the essential cause of the lesion is trauma and the histologic aspect of puerperal cervicitis is identical with that of ectropion. The most frequent single factor responsible for this trauma is early rupture of the membranes, which is therefore inadvisable as a method of inducing labor. Treatment by cauterization can be carried out as an outpatient method without special preparation or after treatment. The author obtained satisfactory results in fifty-six of sixty cases of cervicitis treated by cautery. Partial failure may be due to inadequate treatment of the endocervicitis, which is probably present in all cases. Cauterization is far more efficacious in recent cervicitis than in cases of long standing, in which the infection is no longer superficial.

Journal of Physiology, London

94: 461-578 (Jan. 14) 1939

Studies on the Chemical Processes Which Occur in Muscle Before, During and After Contraction. M. Dubuisson.—p. 461.
Experimental Investigations of Reservoir Blood of Cat Spleen; with Special Reference to Hemolysis and Sedimentation Reaction. J. Mellgren.—p. 483.
Reflex Acceleration of Respiration Arising from Excitation of the Vagus or Its Terminations in Lungs. M. Hammouda and W. H. Wilson.—p. 497.
Oxygen and Carbon Dioxide Content of Blood of Normal and Pregnant Decerebrate Cats. A. G. Steele and W. F. Windle.—p. 525.
Some Correlations Between Respiratory Movements and Blood Gases in Cat Fetuses. A. G. Steele and W. F. Windle.—p. 531.
Blood Volume in Lambs. T. Gotsev.—p. 539.
Note on Manometric Estimation of Oxygen in Small Samples of Blood. M. F. Mason.—p. 550.
Properties of Secretin. G. Ågren.—p. 553.
Relation Between Conduction Velocity and the Electrical Resistance Outside a Nerve Fiber. A. L. Hodgkin.—p. 560.
Oxygen in Carotid Blood at Birth. J. Barcroft, K. Kramer and G. A. Millikan.—p. 571.

Lancet, London

1: 1-68 (Jan. 7) 1939

Recurrent Peptic Ulceration: Causes of and Design for the Second Operation on the Stomach. R. E. Kelly.—p. 1.
*Estrogenic Properties of "Stilbestrol" (Diethylstilbestrol): Clinical and Experimental Investigation. P. M. F. Bishop, Muriel Boycott and S. Zuckerman.—p. 5.
Treatment of Pyloric Stenosis with Eumydrin. R. H. Dobbs.—p. 12.
Medial Approach to the Midpalmar Space and Ulnar Bursa. A. K. Henry.—p. 16.
Estimation of Sulfanilamide in Biologic Fluids. A. E. A. Werner. —p. 18.
Interference Dissociation. C. W. C. Bain.—p. 20.
*Gout Following Salyrgan Diuresis. N. L. Price.—p. 22.

Properties of a Synthetic Estrogen.—Bishop and his co-workers administered a synthetic estrogen (stilbestrol) to eighteen patients with amenorrhea of variable duration. "Estrogenic withdrawal bleeding" was provoked in eight, and rhythmic uterine hemorrhage occurred during the period of administration in two. Of the patients who did not respond by uterine bleeding, one had previously failed to respond to the administration of natural estrogens and one had received no previous estrogenic therapy. The amenorrhea in this patient was of eight years' duration, the onset having accompanied that of anorexia nervosa. Six patients failed to respond to the synthetic estrogen though previous courses of theelol (estradiol benzoate) had resulted in withdrawal bleeding. Of the ten treated successfully, three had received no estrogen previously but responded to such low doses as 14 mg. or less given by mouth. In fifteen patients with the menopausal syndrome and in ten with atrophic conditions of the vagina symptomatic relief (especially with regard to the daily frequency of hot flushes), vaginal smear pictures and improvement of the local condition (of the vagina) were taken as the main criteria of response. Of these twenty-five patients, eight failed to respond to the administration of the synthetic substance. Five of these received relatively small doses, totaling 2.8 mg. or less, though three of these had reacted satisfactorily to lower doses of ethinyl estradiol (a partially synthetic compound of natural estrogen). Of the remaining three, two were suffering from atrophic vaginitis, neither had received previous estrogenic therapy and with both there was doubt as to whether the local condition was due to ovarian deficiency. The third patient failed to react to small doses of ethinyl estradiol. Of the successfully treated patients, one reacted to 0.1 mg. given by mouth daily for a fortnight both symptomatically and with the production of an estrous smear (though the improvement was not maintained after a further course). Another patient failed to respond to doses of 0.1 mg. but reacted satisfactorily to 1 mg. doses both as to the fortnightly hot flushes and the vaginal smear. In all the other subjects doses of 1 mg. or more produced satisfactory responses. Symptomatic improvement was almost always associated with a transformation of the vaginal smear to the estrous type. Two patients with dysmenorrhea were completely relieved by the daily administration of 1 mg. tablets of the synthetic substance during the first half of the cycle. They had experienced similar relief from four injections of 5 mg. of estradiol benzoate. Nausea or vomiting occurred in three cases. The authors do not believe that these symptoms depend on the dose given.

Gout Following Salyrgan Diuresis.—Although mentioned by Hench (1936), the occurrence of gout after the use of salyrgan for the relief of edema in congestive cardiac failure does not appear to be widely recognized. Price reports five such cases and believes that the fact that they were observed within a period of little more than a year suggests that the association of salyrgan and gout cannot be uncommon. In all five cases salyrgan was given intramuscularly in doses of 1 cc. on alternate days and supplemented by 1.3 Gm. of ammonium chloride given three times a day by mouth. All the patients were kept strictly at rest and on a reduced intake of fluid. The onset of gout following the use of salyrgan in cases of cardiac failure is of grave prognostic significance. It seems to be usual for patients to succumb within a few weeks of the attack. It may be that gout develops only after forced diuresis in patients in the terminal stages of cardiac failure, or gout may have some deleterious effect on the cardiac condition. This raises the question of the desirability of using mercurial diuretics like salyrgan when there is a history of previous gout, since it seems possible that too successful a diuresis may be dangerous.

Archives des Maladies du Cœur, Paris

31: 1175-1270 (Dec.) 1938

Contribution to Study of Rhythm Coupled by Sinusal Bigeminism. A. Clerc, R. Lévy and A. Calo.—p. 1175.
*Alcoholic Beriberi. A. Van Bogaert.—p. 1195.
Disturbances of Rhythm Provoked by Atropine. J. Enescu and N. Vacareanu.—p. 1223.
Anomalies of Electrocardiogram in Course of Acetonemic Vomiting During Childhood. C. D. Avierino.—p. 1237.
Sedimentation Speed of Erythrocytes in Chronic Valvular Cardiopathies: Pathogenic and Therapeutic Considerations. D. Simici, D. Zamfir and V. Munteano.—p. 1241.
Influence of Nitric Esters in Gaseous State on Hypertension. A. Apéria. —p. 1252.

Alcoholic Beriberi.—Following remarks about the effects of an insufficiency of vitamin B_1 in beriberi, Van Bogaert calls attention to the relationship between alcoholic polyneuritis and deficiency in vitamin B_1. He gives a detailed report of the clinical history of a man aged 28 who entered the hospital with the diagnosis of myocardial insufficiency. The circulatory disorder was characterized by dyspnea, stasis in the jugular veins, hepatomegaly, generalized edema and pleural effusion. The heart was greatly enlarged and presented severe electrocardiographic changes. Moreover, the patient had a polyneuritis localized in the inferior members. The anamnesis revealed that, two years before, the patient had undergone a partial gastrectomy on account of a pyloric ulcer. For the last six years he had consumed daily large quantities of alcohol. He received neither diuretic nor cardiotonic medication but in addition to an ample diet was given daily an intramuscular injection of 10 mg. of crystallized vitamin B_1 (5,000 international units). Under the influence of this treatment the diuresis increased, edema disappeared within six days and the pulse became slower. From the tenth day of the treatment the x-ray image of the heart was practically normal. In the course of the following week the dyspnea disappeared entirely and the liver was no longer palpable. At the end of this week the muscular pains in the legs had entirely disappeared and the patient was able to get up, walk around and even mount stairs without signs of dyspnea. The patellar reflexes were now normal but the achilles tendon reflexes were still abolished. After the patient had been in the hospital for three weeks the dose of vitamin B_1 was doubled; that is, two injections of 10 mg. were given daily. This was done in the hope of restoring the electrocardiogram to normal outlines. However, when this supersaturation with vitamin B_1 had only a slight effect and a nervous factor in the abnormal electrocardiogram could be excluded, other tests were made and it was found that the basal metabolism was below normal. When this was discovered, treatment with thyroid was instituted and was continued even after the patient had been discharged from the hospital as apparently cured. In commenting on this case the author first estimates the mode of development of the B_1 avitaminosis and shows that it was not primary, as is the case in Asiatic beriberi, but rather secondary; that is, it was caused by defective assimilation. In this connection he estimates the possible importance of gastrectomy, hepatic lesions and alcoholism. After discussing the divergences which exist between the neurocirculatory syndrome of Asiatic beriberi and that of the secondary avitaminoses, he estimates whether the thyroid was involved in the electrocardiographic modifications of the reported case. He points out that the thyroid stimulates the general cellular exchange, even that of the myocardium, and that the electrocardiographic disturbances in B_1 avitaminosis seem to be the manifestation of a slackening of the intramyocardial cellular exchanges.

Archives de Médecine des Enfants, Paris

42: 1-72 (Jan.) 1939

*Hypertrophy of Thymus in Course of Acute Leukemia of Children. R. Pierret, L. Christiaens and Popoff.—p. 5.
Prophylactic and Therapeutic Value of Placental Globulin Extract in Measles, Scarlet Fever and Mumps. Mathilde de Biehler.—p. 29.
Relapsing Infectious Encephalitis. L. Nove-Josserand, G. Bertrand and Mlle. M. Flotard.—p. 34.

Hypertrophy of Thymus in Acute Leukemia.—Pierret and his associates say that in a comparatively short time they observed three children in whom acute leukemia was accompanied by hypertrophy of the thymus. They report the clinical histories of these three children, who varied in ages between

6 and 10 years. Then, following a review of the literature, they discuss the problem of concurrence of thymic hypertrophy and leukemia and reach the following conclusions: 1. There exists a clinical form of leukemia, which affects mainly children and which is characterized by the presence of a hypertrophy of the thymus. The hypertrophy of the thymus is not accompanied by clinical signs that are usually ascribed to this anatomic manifestation. In one of the described cases in which the necropsy revealed a thymus weighing 200 Gm. there were no inspiratory effort, no roaring sound and no dyspnea. The authors find it difficult to subscribe to the opinion of certain investigators who make thymic hypertrophy the "primum movens" of the disease, that is, who suggest that the cells issue from the thymic tumor and then pass into the circulation. They, on the contrary, think that the invasion of the thymus is secondary to the leukemia. The clinical factors that are of especial importance in this particular form of leukemia are (1) its extreme gravity and the superacute character of its evolution and (2) its extraordinary sensitivity to roentgen rays, which demands the greatest prudence in the utilization of roentgen therapy. From the diagnostic point of view, two points deserve to be stressed: (1) If roentgenoscopy indicates the existence of a tumor of the thymus, it is necessary to make a systematic examination of the blood and (2) it is advisable to make a careful roentgenologic examination in all cases of acute leukemia before roentgen therapy is instituted. It is not sufficient to relate observed shadows to mediastinal adenopathies, but it must be ascertained whether certain characteristics do not permit to connect these shadows to the thymus. In an addendum to this report the authors say that they observed a fourth case of enormous thymic hypertrophy in a child aged 4 who had leukemia. This child was hospitalized in a moribund condition. The necropsy favored the diagnosis of lymphoid leukemia, for it revealed a remarkable lymphoid infiltration of all organs. The thymus was of enormous size and it was entirely infiltrated with lymphocytes; Hassall's corpuscles were absent. The authors think that thymic infiltration is perhaps more frequent than was thought in the course of acute lymphoid leukemia of childhood, constituting a particularly severe form of the disease.

Encéphale, Paris

2: 239-294 (Dec.) 1938

*Choreas of the Aged. R. Pauly.—p. 239.
Temporospatial Disorientation and Preponderance of Right Hemisphere in Proprioceptive Agnoso-Akinesias. M. Dide.—p. 276.

Choreas of the Aged.—In this report on the choreas of the aged, Pauly first gives a historical review of the literature and then presents anatomoclinical studies on the different forms of chorea that appear in aged persons. In persons over 60 it is possible to observe generalized and localized choreas, chronic, acute and subacute choreas, and primary and secondary choreas. The chronic generalized choreas of the aged are rarer than the choreas of Huntington; that is to say, the choreas due to a heredodegeneration. Much more frequent are the nonhereditary choreas. These choreas may be accompanied by mental disorders of the dementia type. Regarding the etiology the author says that in exceptional cases they are of syphilitic origin, sometimes they are arteriosclerotic, but usually they present anatomopathologic aspects much like those of Huntington's chorea. The chronic hemichoreas fit into the framework already established for the choreas of adults. They may be localized in the putaminocaudate region, in the nucleus of Luys or in the pedunculocerebellar region. Softened and hemorrhagic foci are the usual cause. Truly acute chorea may also develop after the age of 60. When this form has the antecedents of Sydenham's chorea or of acute articular rheumatism, some authors regard it as a relapse; that is to say, as a reactivation of the causal organism. Nevertheless, acute chorea can also be primary. It is more often generalized than localized; it is rarely accompanied by cardiac lesions and it has a tendency to relapses and to chronicity. Discussing the etiology of the latter form the author does not hesitate to concede the existence of a chorea of Sydenham in spite of its classic predilection for young persons. However, an anatomoclinical observation and experimental studies by Harvier and Decourt prove the existence of choreas provoked by a neurotropic virus comparable to that of epidemic encephalitis if not identical with it. Besides these acute choreas of the Sydenham type there develop also subacute choreas with relapses, choreas which Lhermitte designates as intermittent. The author reports a case illustrating this type. Certain arguments militate in favor of a formal distinction between this intermittent form and the chorea of Sydenham. Discussing the anatomic aspects of the choreas of the aged, the author says that they are complex and diverse: there may be cortical and striatal lesions, lesions of the body of Luys and subthalamic ones, and lesions of the superior cerebellar peduncle. In each of these regions the eliciting causes are found to be multiple. However, whereas in the superior cerebellar peduncle the disintegration is usually of vascular origin and whereas in the body of Luys and in the subthalamic region softening is predominant, in the cortex and the central gray, on the other hand, there may be vascular or infectious lesions and cellular degeneration.

Presse Médicale, Paris

47: 81-96 (Jan. 18) 1939

Nonsurgical Treatment of Coxitis: Present Status of Question. F. Coste and G. Aubert.—p. 81.
*Grave Postoperative Attack of Paroxysmal Tachycardia Treated Successfully by Procainization of Left Stellate Ganglion. R. Leibovici, L. Dinkin and Wester.—p. 83.

Injection of Stellate Ganglion for Paroxysmal Tachycardia.—Leibovici and his associates report the clinical history of a man aged 29 who developed a severe form of paroxysmal tachycardia after an appendectomy. Since energetic medication was without effect on the tachycardia, it was decided to arrest the tachycardia by injecting procaine hydrochloride into the left stellate ganglion. About 20 cc. of a 1:200 solution of procaine hydrochloride was injected slowly. The effect was immediate. The pulse fell suddenly from 180 to 72 and the patient felt greatly relieved. In the minutes which followed the injection, Bernard-Horner's syndrome developed and persisted for several hours. This confirmed that stellate blockage had been accomplished. The pulse remained normal (always around 76 to 80). The further course was uneventful and the patient was discharged on the eighth day. Four weeks after the intervention an examination of the heart revealed nothing abnormal. The patient never had another attack of tachycardia. The authors cite factors which indicate that this was a case of paroxysmal rather than of sinus tachycardia and then point out that it is no longer disputed that the sympathetic plays a part in sinus tachycardia and that surgical interventions on the sympathetic have been employed with good success in a number of cases of sinus tachycardia. In a table they list a number of cases of sinus tachycardia and the surgical interventions that were employed (sympathectomy on the left side, section of the efferent branches of the stellate ganglion, stellectomy on the left, right or both sides, hemithyroidectomy and so on). In a second table they list cases of paroxysmal tachycardia and the various surgical treatments employed in them (stellectomy on the left or right side and injection of procaine hydrochloride into the stellate ganglion). Further they show that interventions on the right stellate ganglion are effective in sinus tachycardia and interventions on the left stellate ganglion in paroxysmal tachycardia. Their own observation as well as that of Mandl indicates that merely infiltration of the stellate ganglion, without stellectomy, may produce favorable results not only immediately but also permanently.

Schweizerische medizinische Wochenschrift, Basel

69: 69-88 (Jan. 28) 1939. Partial Index

Prognosis of Mental Diseases. B. Dukor.—p. 69.
*Familial Occurrence of Leukemia. R. Laub.—p. 71.
Acute Porphyrinuria in Puerperium: Case. W. Kurt.—p. 73.
How Long Does Test Serum Retain Agglutination Capacity? R. Meyer-Wildisen.—p. 74.
*Further Cases of Spontaneous Poliomyelitis in Domestic Animals (Hogs). E. Frauchiger and W. Messerli.—p. 74.

Familial Leukemia.—Laub cites authors who have published reports about the familial occurrence of leukemia and describes the clinical history of a woman aged 26 who was under his observation and who died of myeloid leukemia. Investigating the etiology of this case he gave special attention to the family history and found that, fifteen years before, the patient's mother had died (aged 32) of the same comparatively rare blood disease, myeloid leukemia. Discussing this familial occurrence, he points

out that other investigators have raised the question whether the familial concurrence is merely accidental or whether hereditary factors play a part. Naegeli and Petri regard an accidental concurrence as most likely. Petri, for instance, finds no proof either in the literature or in his own observations that the appearance of leukemia in related persons is connected with hereditary factors. In contradistinction to Petri, Curschmann believes that the familial concurrence of leukemia is not merely accidental and that, although the question is not definitely solved, further investigations on the families of patients with leukemia might reveal signs of hereditary changes and susceptibilities of the blood forming organs. He, like Morawitz, rejects the theory of the infectious origin. The author thinks that his observation seems to support the opinion of the latter authors, namely that the familial occurrence of leukemia is not accidental but due to hereditary factors.

Spontaneous Poliomyelitis in Hogs.—Frauchiger and Messerli say that since acute anterior poliomyelitis has been observed in cattle they have given special attention to paralytic symptoms in domestic animals. In this report they describe observations on two hogs which presented symptoms that greatly resembled those of acute anterior poliomyelitis. On the basis of these symptoms the disorder was diagnosed as probable poliomyelitis. Both animals were killed and the microscopic examination of the spinal cord revealed in both of them histologic aspects resembling those of acute anterior poliomyelitis in human subjects. Material from the spinal cords of these animals was introduced into two other hogs and into one steer. Because of an inadequate technic, nothing could be learned from the inoculation test on the hogs, but the steer, in which a formerly devised technic was employed for the inoculation, developed fever, the curve of which showed the dromedary type. Other symptoms included signs of fatigue, stiffness of the neck and an atactic walk. From the seventh day after the inoculation the symptoms commenced to subside and a few days later the animal seemed normal again. The animal was killed fourteen days after the inoculation. The histologic aspects of the central nervous system were those of lymphocytic meningo-encephalomyelitis rather than those characteristic for poliomyelitis, but it must be remembered that the animal was not killed during the acute stage, when signs more typical for poliomyelitis might have been detected. However, since Spielmeyer's investigations demonstrated that similar histologic aspects do not necessarily indicate the same disease, etiology or causal agent, the authors do not definitely conclude that the described paralytic symptoms in hogs are identical with human poliomyelitis, but they do believe that this could be the case. They think that the detection of further cases of poliomyelitis in animals, the transmission from animal to animal and from man to animal, will provide more certainty.

Gazetta degli Ospedali e delle Cliniche, Milan

59: 1255-1276 (Dec. 18) 1938

*Roentgen Irradiation of Hemopoietic Tissues in Normal Persons and in Those with Blood Diseases. A. Bertola, M. Ravetta and C. Zelaschi.—p. 1255.
Identification of Chronic Peritonitis Incapsulans with Hernia of Peritoneal Fossa. R. Babini.—p. 1261.

Bone Marrow and Roentgen Irradiations.—Bertola and his collaborators studied the modifications of bone marrow from roentgen irradiations on the spleen, the sternum or other bones, or on the enlarged lymph nodes. The observations were made on four normal persons, eight patients with myeloid or lymphatic leukemia and two patients with malignant lymphogranuloma. They were applied every other day in small doses (from 210 to 630 roentgens in normal persons and from 60 to 150 roentgens for each treatment). The total number of treatments is not specified by the authors. In all cases bone marrow for microscopic study was taken by sternal puncture, before and after administration of the treatment. The irradiations caused no change in the erythroblastic tissues in normal persons or in the patients. They had a slight effect on the granuloblastic tissues of normal persons and a favorable action on the granuloblastic tissues of the patients. The proliferation of erythroblasts (ratio leukoblasts: erythroblasts) and the curves of maturation and karyokinesis did not change in normal persons. In leukemia and malignant granuloma the production of erythroblasts did not change. In leukemia the ratio leukoblasts: erythroblasts improved or became normal from retarded production of granuloblasts. The curves of cellular maturation and karyokinesis improved (diminished mitosis, diminished prophases and increased telophases). The irradiations induced slight variations on the curves of cellular maturation in malignant lymphogranuloma. The number of lymphocytes in the bone marrow in cases of lymphatic leukemia diminished after the treatment. As a rule the myelogram in leukemia shows predominance of immature leukoblastic cells (myeloblasts or promyelocytes) before roentgen treatment and predominance of mature cells (myelocytes or myelometamyelocytes) or else a normal aspect after the treatment. The favorable modifications of the myelogram are induced by irradiations either of the bones or of the spleen. In one case of myeloid leukemia and a case of lymphatic leukemia, favorable changes of the bone marrow were induced from irradiations only of the spleen. The authors' attention was called to the pathogenic role of the spleen in leukemia and on the therapeutic value of roentgen irradiations on the structure. According to the authors the roentgen treatment is of value in these blood diseases, especially in leukemia, in which it controls the dysfunction of the hemopoietic organs which causes the disease. The article is a preliminary report.

Bol. de la Soc. Cubana de Pediatría, Havana

11: 1-54 (Jan.) 1939. Partial Index

*Evolution of Primary Tuberculous Infection in Infants. J. Rodríguez Betancourt.—p. 11.
Rupture of Kidney in Child: Case. J. García Romeu.—p. 25.

Primary Tuberculous Infection in Infants.—Rodríguez Betancourt followed the behavior of primary tuberculous infection by means of x-ray studies of the thorax in a group of 250 infants. The infection developed in the following forms: In seventy-two cases there was tracheobronchial tuberculous adenopathy, in 131 there was pulmonary parenchymal infiltration, in thirty-six there was unilateral or bilateral bronchopneumonia and in eight there was caseous pneumonia. The lesion regressed in 182 infants, forty are still being treated and twenty-eight died. Tuberculous meningitis is the most frequent complication of the grave forms. As a rule the lesions of primary infection heal and the patient remains allergic. The evolution of acute or chronic forms depends on how long the patients are permitted to remain in tuberculous environments. An early diagnosis is important. It must be followed by (1) their separation from the tuberculous contact, (2) establishment in good hygienic quarters with proper diet and (3) early administration of treatment. It is advisable to follow the evolution of the tuberculous lesion by means of repeated x-ray examinations of the thorax. Artificial pneumothorax is indicated in acute and subacute forms.

Klinische Wochenschrift, Berlin

18: 1-40 (Jan. 7) 1939. Partial Index

Hereditary and Climatic Factors in Rheumatic Diseases. S. Dietrich.—p. 1.
Immunobiologic Evaluation of Active Prophylactic Vaccination Against Diphtheria by Means of Alum Diphtheria Toxoid in Children. G. Paschlau.—p. 7.
*Adrenal Cortex and Obesity. C. Bomskov and E. Schneider.—p. 12.
Active Factor That Increases Leukocytes. E. Baumann.—p. 14.
Action of Ascorbic Acid on Lipase Content of Blood. W. Krüger.—p. 19.
Electrical Method for Multiple Registration of Ocular Movements and Nystagmus. R. Jung.—p. 21.
Parasympathetic Fibers in Trigeminal Nerve and Trophic Innervation of Same. S. Moteki.—p. 25.

Adrenal Cortex and Obesity.—Bomskov and Schneider point out that investigations by Verzar revealed that the bilateral extirpation of the adrenal cortex results in the complete cessation of fat resorption, that the administration of adrenal cortex extract will restore the fat resorption but will not increase it above the normal values, and that yeast can be substituted for adrenal cortex extract. In their own studies on the role of the adrenals in fat metabolism the authors observed that the length of survival of rats or mice following bilateral extirpation of the adrenals is dependent on the age of the animals; infantile rats and mice all die within a few days after the extirpation, whereas adult animals show two different types of reactions. One group dies with the signs of cachexia, while the other group survives indefinitely. The authors describe studies on these two groups

of animals. Summarizing their observations, they say that about half of the animals develop cachexia, which results in death after from thirty to thirty-five days. The fat reserves of these animals decrease greatly. Microscopic studies disclose no remnants of cortical tissue and the thyroid is unusually active. The symptomatology is probably the result of the abolishment of the cortical function and secondarily of the activation of the thyroid. In the other animals, which survive indefinitely, an increase in weight can be observed which is the result of great fat deposits. The rats become giants, weighing 350 Gm. and more (normal weight from 200 to 250 Gm.). The necropsy disclosed in all of these giant animals accessory adrenals consisting entirely of cortical tissue. These accessory adrenals greatly exceed the removed organ in mass and it is concluded that the cause of the obesity of these animals is a hyperfunction of the adrenal cortex. Microscopic examination of the thyroids of the giant animals disclosed a state of complete quiescence.

Münchener medizinische Wochenschrift, Munich

86: 1-40 (Jan. 6) 1939. Partial Index

Osteomyelitis. G. Magnus.—p. 1.
Spasmophilia and Convulsions During Childhood. K. H. Stauder.—p. 4.
*Capacity for Sports of Patients with Heart Disease. H. G. Hoffmann. —p. 7.
Increasing Tension of Articular Capsule and of Tendinous Tissues by Injection of Mixture of Patient's Own Blood and Clauden (Hemostatic). F. Heiss.—p. 9.
Possibilities of Practical Measurement of Conjugata Vera by Means of Digital Palpation with Aid of Special Instrument (Palpating Thimble). R. Knebel.—p. 10.
Optimal Digitalis Therapy of Patients with Heart Disease. R. Aschenbrenner.—p. 13.
Slow Fractures of Ascending Ramus of Pubis. K. Daubenspeck.—p. 17.

Exercise in Heart Disease.—Hoffmann says that the lack of a reliable method for testing the cardiac function should not lead the physician to forbid all exercises in the presence of doubtful signs. It is his aim to demonstrate that after clinical cure has been obtained in heart disease it is not only permissible but advisable to institute gradually increasing exercises. Among 132 patients with cardiac defects he found only ten in whom it was necessary to forbid all sports. All others (122), who no longer had a decompensation and who no longer required treatment, could be permitted to take up some sport under medical supervision. Those whose reaction to exercise was at first unknown were encouraged to swim under the supervision of a physician. In many instances it was acknowledged that swimming is the most favorable physical exercise. This is probably chiefly due to the horizontal position in the water, which facilitates the backflow of the blood from the periphery. Moreover, a suitable respiratory technic probably plays a part. It is important that the patient become accustomed to the water; especially at the onset of the swimming exercises he must be guarded against excessive shock and dyspnea. The clinical histories of three patients are described; two were young persons with mitral defects and one was a man aged 51 with an aortic insufficiency of long standing and with myocardial impairment. It is demonstrated what can be accomplished in sports, in spite of cardiac defects. In order to retain the increased capacity, the exercise must be continued.

Maandschrift voor Kindergeneeskunde, Leyden

8: 89-134 (Dec.) 1938

Etiology of Tower Head. A. J. de Leeuw-Aalbers.—p. 89.
"Spontaneous" Generalized Osteoporosis in Small Girl. J. C. Schippers. —p. 108.
*Sternal Puncture in Children: Normal Sternal Punctate in Children. G. M. H. Veeneklaas.—p. 118.

Sternal Puncture in Children.—Veeneklaas, in exploring the possibilities offered by sternal punctures in children for the examination of the bone marrow, studied the sternal punctates of fifty children. He found that the manubrium, having the largest medullary nucleus, is the best site for the puncture. An exact estimation of the percentages of the different cells is possible only on the basis of statistical formulas. Megaloblasts, the nucleated and youngest red element, with a diameter of from 16 to 18 microns, which are found in large numbers in the bone marrow of patients with pernicious anemia, are found regularly, although in small percentages, in the sternal punctate of children and must be regarded as normal elements. Micromyeloblasts and paramyeloblasts, which heretofore have generally been regarded as leukemic cells, were likewise regularly observed in small numbers in the medullary specimens of children. Thus they too must be regarded as normal manifestations in children. With increasing age there appears in the bone marrow a change in the ratio of granulocytes to lymphocytes, just as is the case in the blood. Megaloblasts, myeloblasts and lymphoblasts are more numerous in children less than 3 years of age than in older children. In cases of lobar pneumonia a pathologic augmentation of myelocytes and of plasma cells can be observed in the bone marrow. In severe cases of celiac disease the bone marrow is characterized by the occurrence of megalocytes that are staff leukocytes and segmented leukocytes with a diameter of from 16 to 18 microns. In severe cases of leukemia the blood picture may be agranulocytic, whereas the bone marrow contains numerous cells of a leukemic nature. Thus, even if the blood picture is normal and there are no noticeable symptoms, puncture of the sternum will permit the diagnosis of leukemia.

Acta Medica Scandinavica, Stockholm

98: 1-139 (Dec. 21) 1938

Hyperthyroidism and Treatment with Compound Solution of Iodine. J. Tillgren and N. Sundgren.—p. 1.
Carcinomatous Metastases of Brain with Syndrome of Charot-Adams-Stokes and Oculogyric Crises. H. Marcus, E. Sahlgren and H. Bjerlöv.—p. 58.
*Physicochemical Condition of Bilirubin in Blood Serum and Urine. I. Snapper and W. M. Bendien.—p. 77.
Diagnostic Significance of Thoracic Leads. J. Freundlich.—p. 83.
Connection Between Takata-Jezler Reaction and Its Variant, the Mancke-Sommer Reaction, and Globulin Fractions of the Blood. A. de Vries. —p. 95.
*Studies on Effect of Nicotinic Acid on Experimental Gastroprival Pellagra: Preliminary Report. S. Petri, F. Nørgaard and E. Bandier. —p. 117.
Experimental Basis of Transfusion of Leukocytes. J. Hanausek.—p. 128.
New Case of Myxedema Accompanied by a Reflex of Myotonic Type of Achilles Tendon. S. Eckerström.—p. 136.

Bilirubin in Blood Serum and Urine.—According to Snapper and Bendien, many investigations have been made on the physicochemical condition in which bilirubin appears in the body fluids. They cite studies carried out by others and by themselves. Their own method was that of ultrafiltration, whereas others employed cataphoresis and ultracentrifugation. They show that the investigations with the different physiochemical methods make it appear highly probable that the serum bilirubin is bound exclusively and quantitatively to the serum albumin. This is the case with any serum, no matter whether the reaction is direct or indirect. In urine from patients with jaundice and in watery solution bilirubin is present in the crystalloid state. The particles, however, are still coarsely molecular, so that on ultrafiltering these fluids the concentration of the bilirubin in the ultrafiltrate depends on the concentration of the collodium solutions from which the membranes are prepared.

Nicotinic Acid in Experimental Gastroprival Pellagra.—Petri and his associates state that previous experimental studies have demonstrated that surgical removal of the stomach in young dogs and pigs gives rise to a severe chronic and fatal pellagra. Moreover, on the basis of various therapeutic experiments on dogs with gastroprival pellagra and on patients with endogenous pellagra the existence of a hitherto not demonstrated antipellagrous function associated with the stomach seems highly probable. Large additions of yeast to the diet given to the dogs made no change in the development or character of the disease, whereas administration of human gastric juice or dried hog stomach brought about a rapid and conspicuous improvement in these animals and also in the pellagrous patients. At present experiments are carried out on gastrectomized pigs in order to determine the influence of parenteral administration of vitamin A, vitamin B_1, riboflavin and nicotinic acid in the course of the experimental gastroprival pellagra and the associated morphologic changes. A preliminary account of the results obtained by administration of nicotinic acid is given in this report. The experiments, which were carried out on pigs, demonstrated the failure of nicotinic acid to exert an effect on experimental gastroprival pellagra. This is contrary to the effect of nicotinic acid in the pellagrous condition produced in

pigs by feeding experiments. It appears that this effect of nicotinic acid is dependent on the presence of a particular ("antipellagrous") function of the stomach. This view seems further to be confirmed by experimental observations obtained by a special technic. Thus the view advanced by Petri and his collaborators as to the gastrogenous character of pellagra has been substantiated further.

Acta Radiologica, Stockholm

19: 505-600 (Dec. 31) 1938

*Roentgen Diagnosis of Primary Tumors of the Lung. N. Westermark. —p. 505.
*Roentgen Therapy in Rheumatic Diseases. G. Kahlmeter.—p. 529.
Total Roentgen Irradiation of Chronic Leukemia. T. Dale.—p. 539.
Treatment of Lymph Node Metastases from Carcinomas of Lips and of Oral Cavity. R. B. Engelstad.—p. 546.
Insufficiency Fractures of Femur and Tibia. C. J. Hansson.—p. 554.
Roentgenologic Demonstration of Perforation of Colonic Diverticulum: Two Cases. B. Stenström.—p. 560.
Treatment wth Hertzian Waves. W. A. G. van Everdingen.—p. 565.
Arthrographic Appearance of Ligaments of Knee Joint. K. Lindblom. —p. 582.

Roentgen Diagnosis of Primary Tumors of Lung.—In this paper on the roentgen diagnosis of pulmonary tumors, Westermark confines himself to the primary growths of the lung. In so doing he pays especial attention to their early diagnosis. He deals with benign tumors as well as with primary sarcoma of the lung. Considered from the pathologic-anatomic point of view, the benign bronchial tumors can be classified as polyp, fibroma, lipoma and adenoma. These tumors give rise to bronchostenosis, which condition dominates the roentgenologic aspects. The diagnosis requires bronchography. The author says that many benign pulmonary tumors are congenital. They spread toward the periphery of the lung. The chondromas are the most common. These appear as rounded or somewhat irregular shadows in the lung and they frequently contain calcifications. Besides chondromas, however, other mesenchymal tumors are found in the lung. The literature contains reports about fibromas, myomas and angiomas of the lung. In order to differentiate these tumors from extrapulmonary growths, bronchography should be carried out and diagnostic pneumothorax should be induced. Bronchial cancer in most cases gives rise to bronchostenosis. On the roentgenogram, this stenosis is usually in evidence earlier than is the shadow of the tumor. In order to facilitate an early diagnosis, the changes caused by bronchostenosis should be watched for and bronchography should be carried out. During the early stages the cancer is usually localized in the finer bronchial ramifications and from here it progresses in a central as well as in a peripheral direction. In the final stage either extensive infiltration of an entire pulmonary lobe or metastases in the hilus dominate the picture. Pulmonary sarcomas are comparatively rare. They are characterized by an expansive mode of growth and form large or small rounded homogeneous shadows, which are located in the center of a pulmonary lobe or occupy an entire lobe or most of the lung.

Roentgen Therapy in Rheumatic Diseases.—This report by Kahlmeter is based on a material of approximately 5,000 cases of different forms of rheumatic disease which were observed during the years 1925 to 1937. Before discussing the results, the author describes the technic which he employed. The tension was 173 kilovolts, the intensity 5 milliamperes, the filter consisted of 0.5 mm. of copper and 1 mm. of aluminum and the focus-skin distance was 30 cm., except in case of the fields which measured 15 by 20 cm.; here it was 40 cm. In most cases the dimensions of the fields were 10 by 15 cm., though fields measuring 8 by 10 cm. were also frequently irradiated. At each session from 150 to 200 roentgens was applied and these doses were repeated two or three times at intervals of two or three days. After an interruption of from four to six weeks a second series was applied in the same manner if it proved necessary, perhaps to be followed by a third series after from six to eight weeks. To be sure, the aforementioned doses were not used in all disorders. In conditions like acute bursitis and peritendinitis stronger doses (200 roentgens) were given once or twice; however, in acute gonococcic arthritis from 75 to 100 roentgens was applied three or four times. Summarizing the results obtained with roentgen therapy, the author says that the effects are best in gonorrheal arthritis, gout, acute infectious arthritis of the septic type and acute cases of bursitis and tendinitis. Although in a lesser degree, results are generally favorable in all forms and stages of tendinitis, in localized myalgia and neuralgia and, on the whole, in all periarthritic symptomatic conditions. Thus, in case of hip disease, for instance, it is important to irradiate not only the joint itself but also the attachments of the trochanteric and adductor musculature. Moreover, the beneficial effect obtained in cases of osteo-arthritis of the knee joint is mainly due to the effect on the tendinitis and tendovaginitis which is always present in the surroundings of the knee joint, particularly on the inner side. It is no easy task, however, to analyze the benefit that may be derived from roentgen treatment in chronic polyarthritis ("rheumatoid arthritis"). In general it may be said that the effect is better the more recent the articular symptoms and so far as they are of clearly inflammatory nature or are periarticular and so far as the restricted mobility is due to the painfulness of the periarticular soft tissues and not to cicatrization or exudate or destruction of cartilage.

Nordisk Medicinsk Tidskrift, Stockholm

16: 1973-2012 (Dec. 17) 1938

*Clinical Aspects of So-Called Spontaneous Subarachnoid Hemorrhage. E. Lyngar.—p. 1974.
Thrombo-Angiitis Obliterans (Buerger's Disease). K. K. Nygaard.—p. 1982.
Ten Years' Experience with BCG Vaccination in Norrbotten. C. Naeslund.—p. 1990.
*Ovalocytosis. N. Söderström.—p. 1996.

Spontaneous Subarachnoid Hemorrhage.—Lyngar says that clinically hemorrhage in the subarachnoid space constitutes a relatively well defined picture, since the symptoms depend on the hemorrhage as such without regard to its cause. The word "spontaneous" indicates that the hemorrhage is not due to trauma. Diagnosis is based on the presence of bloody spinal fluid; the blood corpuscles sink without coagulation, and the fluid over the corpuscles is yellowish. The source of the bleeding cannot be definitely determined in life. A bleeding may reach the subarachnoid space secondary to a hemorrhage in the epidural or subdural space or secondary to a superficial intracranial hemorrhage which makes its way either through pia or into the ventricle system, or the bleeding may originate in the blood vessels in the subarachnoid space. The author reports fourteen cases observed during a three year period. Seven patients were under 35; the youngest was 9 months old. Nine recovered. The disorder was characterized by sudden onset and symptoms of gradually increasing intracranial pressure and meningeal irritation. Only two cases were afebrile. Ophthalmoscopic examination, done in thirteen cases, revealed in seven changes in the fundus probably due to the intracranial hemorrhage, namely changes in the optic papilla, retinal hemorrhage, and in one case atrophy of the optic nerve. The etiology was often uncertain. The possibility of angiospastic disorders as an underlying cause is considered. In one case there was epilepsy, in one hypertonia with headache; in three there had been headache for a longer time. Treatment consisted of spinal punctures, with removal of never more than from 5 to 8 cc. of the cerebrospinal fluid in one session.

Ovalocytosis.—Ovalocytosis, Söderström states, is a morphologic blood anomaly characterized by the more or less marked elliptic form of most of the red blood corpuscles. Reports of more than 100 cases have been published. There was hypochromic anemia in some of the cases; in some a hemolytic jaundice was present. In some of the cases with anemia definite ovalocytosis persisted after disappearance of the anemia, while in others the ovalocytosis was definite only in the anemic stage. Familial occurrence of the ovalocytosis was frequent. The ovalocytes are rather small and deficient in hemoglobin and should not be confused with the elliptic megalocytes of pernicious anemia. In the three personal cases reported the first examination revealed a moderate hypochromic anemia. In one of the cases treatment with iron resulted in parallel regression of both the anemia and the ovalocytosis; in another, which was familial, the treatment was followed by improvement of the anemia but the ovalocytosis remained unchanged. Hematocrit examination, according to Enghoff, showed a low volume index in two cases.

THE STUDENT SECTION

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SATURDAY, MARCH 25, 1939

A Fourth Year Medical Student Is Introduced to Lobar Pneumonia

JOHN F. DOUGHERTY

Boston University School of Medicine, Class of 1939

BOSTON

In the year 1867, while discussing medical education, Oliver Wendell Holmes stated:

> The most essential part of a student's instruction is obtained, as I believe, not in the lecture room but at the bedside; nothing seen there is lost; the rhythms of disease are learned by frequent repetition; its unforeseen occurrences stamp themselves indelibly on the memory. Before the student is aware of what he has acquired he has learned the aspects and causes and probable issue of the disease he has seen with his teacher, and the proper mode of dealing with them, so far as his master knows.

The basic truth of this remark has been more and more accepted by teachers of medicine, and now as a result the average present day student in a good medical school is fortunate in the almost unlimited opportunities he is offered to pursue the study of medicine at the bedside in large teaching hospitals. In such hospitals clinical material of all forms is abundant, and newer forms of therapy are constantly being employed; the student is in a position to observe, at first hand, their efficacy or failure.

This is particularly true with reference to an important and common disease such as lobar pneumonia. Through didactic teaching, with his attention focused on the textbooks and with only occasional observation clinics, the student is apt to form the idea that lobar pneumonia is, for the most part, a very typical disease, with constant and impressive physical signs. It is only when the occasion for a clinical clerkship is presented and actual cases are placed in his hands for examination and diagnosis that he becomes aware of the frequent and almost diabolic nonconformity of this disease.

In the Fifth Medical Service at the Boston City Hospital, as soon as a patient with lobar pneumonia is admitted he is seen by one of the house officers, who immediately takes a blood culture and sends a sample of the patient's sputum to the Pneumonia Laboratory for typing. The Pneumonia Service, under the leadership of Dr. Maxwell Finland, is notified that a patient with pneumonia has been admitted, and some member or members of this service review the case and offer therapeutic and prognostic suggestions. In the meantime the patient is placed as soon as possible in the hands of one of the clinical clerks, who are fourth year students. The clerk is made responsible, the condition of the patient permitting, for the following items:

1. A complete history, including family, marital, social and past history as well as of the present illness.
2. A thorough physical examination. (Both history and physical examination may be limited in extent if the patient is critically ill but will be completed during convalescence.)
3. Examination of the blood to include red blood cell count, white blood cell count, hemoglobin determination (Sahli), differential count with a description of the smear, hematocrit study, mean corpuscular volume, mean corpuscular hemoglobin and mean corpuscular hemoglobin determination.
4. Examination of the urine to determine color, reaction and specific gravity, tests to determine the presence of sugar, albumin, acetone and bile, and a microscopic examination of the centrifuged sediment.
5. Microscopic examination of the sputum after Ziehl-Neelsen (acid fast), Gram and Löffler's methylene blue staining.
6. Examination of the specimen of stool for the presence of occult blood.
7. Withdrawal of blood for Hinton's test and, when the patient is over the age of 50 or when it is otherwise indicated, withdrawal of blood for nonprotein nitrogen or sugar determination.
8. Any further examination, such as lumbar puncture or gastric analysis, at the discretion of the house officers or visiting staff.

On the morning following admission the history, physical examination and results of the laboratory studies are discussed by the clinical clerk with one of the resident staff, and later in the morning the case is presented to a visiting physician, who questions the student concerning his diagnosis and suggested therapy.

During the hospital stay the patient's clinical course is followed by the clerk under the surveillance of the house officers or visiting staff, and the clerk is responsible for the daily laboratory work that is indicated and for progress notes.

Every opportunity is extended to observe the effect of whatever therapy is given, and the clerk also is expected to know the results of any x-ray examination or electrocardiographic or other tests performed.

Should death occur and permission for a postmortem examination be obtained, the clinical clerk is informed of the time of the necropsy and is given an opportunity to correlate the clinical and the postmortem appearance in the case that he has had under observation in the manner outlined.

For the three months period from September through November 1938, to give an example of the opportunities now offered students in an active teaching service, the clinical clerks in the Fifth Medical Service of the Boston City Hospital had occasion to observe in this manner twenty-three cases of lobar pneumonia. These cases represented an unusually fine cross section of lobar pneumonia. The age of the patients varied from 15 to 76 years, the duration of the symptoms before the patients entered the hospital varied from two to fourteen days, and the physical signs presented by the patients varied from an almost negative examination and history to an overwhelming, prostrating infection.

All these patients had sputums which were typed and found positive for some specific type of pneumococcus; abnormalities of the chest were in all cases confirmed by x-ray examination.

Among the twenty-three cases thus observed there were six deaths, or a mortality rate of 26 per cent. Of these six patients, two were examined post mortem at the Mallory Institute, two were regarded as medicolegal cases because of a history of alcoholism, and permission for postmortem examination on the remaining two was refused. While so many fatal cases in a group so small seems unusually high, these fatalities are partially explained by the fact that in one case (6) not only was there a delay in entering the hospital, the patient having been ill six days before admission, but also there was a long history of chronic alcoholism; in another case (7) there was delay before hospitalization and the clinical picture was complicated by hypertension, obesity and alcoholism. In the other four fatal cases, death appeared to occur as the result of overwhelming infection.

It is noteworthy that of the patients encountered with pneumococcus type II infection, which usually is not considered to be most likely to prove fatal, four died. All received serum. Inquiry shows that approximately the same high mortality rate in the other services of the Boston City Hospital existed for pneumococcus type II infection during the time interval under discussion and that deaths from this type of pneumonia have been more frequent so far this year throughout the entire state. At first this was thought due, perhaps, to a lowered efficacy of the serum, but after adequate investigation it now appears that in this locale at the present time there is a pneumococcus type II of greatly increased virulence.

An opportunity was afforded to observe closely the typical response in pneumonia to specific serum therapy and to learn the technic of administration. A patient receiving type I serum showed prompt recovery. It is truly impressive to any one to see the marked improvement in the general condition of a patient—disappearance of delirium, drop in temperature, pulse and respiratory rate and decrease in cyanosis—following serum therapy. Such improvement was noted in several cases within a few hours after serum treatment was commenced.

The students are taught the factors that influence the dosage of the type specific serum, namely the age of the patient, the amount of involvement, the presence of a positive blood culture, the duration of the disease, and pregnancy or any other complications.

They are also impressed with the necessity for inquiring about and testing for sensitivity and to be prepared to cope with any of its manifestations during serum treatment. They are shown the results of intracutaneous and conjunctival tests and are instructed to watch for the immediate and the thermal reactions, as well as the symptoms of serum sickness.

One case was encountered (case 12) in which the type specific serum seemed to have no effect on the temperature, pulse or respiratory rate. Another typing was done which disclosed the presence of a second type of infection, and injection of serum specific for the second type of pneumococcus brought about an immediate fall in the temperature, pulse and respiratory rate, and uneventful convalescence proceeded. This case emphasized the vital importance in the treatment of pneumonia of accurate sputum typing.

The utility of sulfanilamide in the treatment of lobar pneumonia, particularly that caused by pneumococcus type III, was witnessed, as well as the use of the newer types of this drug, specifically sulfapyridine.

In view of the statistical inadequacy of this report and with a consciousness of my inexperience, I wish it understood that this article is in no sense an endeavor to discuss the diagnosis or treatment of pneumonia. It is written in a grateful effort to describe the opportunities offered to an ordinary medical student as part of his fourth year work in medicine to become introduced to so important and so common an infectious disease as pneumonia.

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Syphilis as a Problem in American Colleges

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Interest in syphilis as a public health problem has been growing in virtually every quarter during the past few years. Our institutions of higher learning, primarily through groups such as the American Student Health Association and more recently through students, have acknowledged the problem. With a few very noteworthy exceptions, however, the attitude in general has been that, while the college might be interested in the general educational aspects of syphilis as a public health problem, syphilis as a medical problem among students is of negligible importance.

This attitude is not surprising, for relatively little has been known about the extent of the venereal diseases among college students, and until recently such things could hardly be spoken of in public. Fortunately during the past few years this state of affairs has greatly changed, especially in the point of view regarding discussion. Far-sighted physicians at the second National Conference on College Hygiene, of which the American Student Health Association was one of the sponsoring members, pointed out that "every approved means should be utilized in identifying and controlling venereal diseases. . . ."

But without facts to demonstrate that diagnosis and control of syphilis among the college population is a sound program from budgetary, medical and educational points of view, opinions persisted that the college student was a "selected" person not to be included in groups with a high prevalence of venereal disease.

THE RECENT PUBLIC HEALTH SERVICE SURVEY

Some few attempts have been made to determine the extent of syphilis among college students, notably the work of Diehl of the University of Minnesota, but all such work has been limited to single institutions. In order intelligently to consider the problem—if there is one—of syphilis among college students, it was evident that facts should be gathered regarding the extent, nature and results of tests carried on among all American colleges.

This the United States Public Health Service attempted during the past year. A recently published article [1] has brought out a number of illuminating facts that should be of value in determining policies of college health administrators with regard to the venereal diseases. The study is by no means the final word on the subject of syphilis in colleges but it provides as broad and comprehensive a sampling as has yet been described.

Questionnaires were sent to some 750 representative colleges early last spring. Replies were received from 515 institutions, which represents a rather adequate return of those colleges at least nominally concerned with student health problems. Records of 83,399 blood tests are included in the study. Of these, 5,011 tests were made on students either in colleges for white students only or in colleges with a very small percentage of Negro students.

Of the 78,388 tests given white students, 156 proved to be positive, a prevalence rate of 19.9 to 10,000 students. This verifies previous observations over the past decade.[2] These data have been compared by some investigators to the usual adult prevalence rate of 1 per cent, with the conclusion that syphilis is relatively unimportant in the colleges.

However, the comparison of the college rate with the corresponding age group of the entire population indicates that syphilis is probably as common among college students as among any other large group of comparable age. Since blood tests are usually given to entering students, mostly freshmen, the great majority of individuals studied in this survey fall within the 15 to 19 year age group, with a smaller proportion in higher age groups. A recent estimate [3] of the rate for the general population age 15-19 years is 18 to 10,000. The slightly higher rate for college students when compared to the 15-19 year age group may result from the fact that students in older age groups, such as juniors and seniors, are included.

Consideration of 2,312 tests given in all-Negro institutions showed positive reactions in sixty-two cases, or 268 cases to 10,000 students. This compares with the general Negro rate of about 300 to 10,000 [4] in the same age group.

Breakdowns of the data by sex, region and size of school enrolment were made. There is an indicated difference of about 15 per cent less syphilis among college women than among college men. Such a difference is in line with nationwide prevalence rates by sexes. Regional division into East, South, Central and West

Read before the American Student Health Association, New York, Dec. 30, 1938.

1. Tumbleson, R. C., and Ennes, H. W., Jr.: A Study of Syphilis in American Colleges, J. Social Hyg., January 1939.

2. Diehl, H. S.: Wassermann Reactions in College Students, Am. J. Pub. Health **21**: 1131-1135 (Oct.) 1931; Venereal Disease Among College Students, Journal-Lancet **56**: 295-299 (June) 1936. Boynton, Ruth E., and Davies, B. P.: The Routine Wassermann Test in College Students, ibid. **58**: 134 (March) 1938. Cole, L. R.: Survey of Syphilis Among Students at the University of Wisconsin, Arch. Dermat. & Syph. **38**: 70 (July) 1938.

3. Vonderlehr, R. A., and Usilton, Lida J.: Chance of Acquiring Syphilis and the Frequency of Its Disastrous Outcome, Ven. Dis. Inform. **19**: 396 (Nov.) 1938.

4. Study by the Division of Venereal Diseases, United States Public Health Service (unpublished data).

showed slight variations, but on the basis of the number of students tested there is no indication that any region has a higher rate than another. There is no significant difference, for example, between the rates for comparable groups in New England and the Deep South. Similarly, slight variations between rates for schools with small enrolments as compared with rates for schools with large student bodies are without significance. These facts seem to add evidence to the statement that syphilis recognizes no geographic or social class bounds.

A factor shown by this study to be a measure of adequateness of a college syphilis control program is the testing method used; that is, whether it is routine or selective.

The term "routine" as used in this study is considered as designating tests performed without exception on all students of a given group, usually freshmen and other entering students. Tests given on suspicious clinical signs at the request of the college physician or of the student were arbitrarily grouped together under the term "selective."

ROUTINE TESTS

Routine tests were given 42,074 students, of whom eighty-four gave positive reactions—a prevalence rate of twenty cases of syphilis to 10,000 students. Of the 36,314 tests made at the request of the physician or student, seventy-two showed positive reactions—a rate of 19.8 cases to 10,000 students. Consideration of the fact that the rates are practically identical regardless of the method of testing and that the variable factor is the total number of tests given leads to the conclusion that the number of cases found in a given student population is in direct proportion to the total number of students tested.

Thus, testing solely on a selective basis would not be considered an optimal application of the serologic dragnet from an epidemiologic standpoint. This follows from the fact that students selectively tested in all schools, large and small, represented not more than 15 per cent of the total student enrolment of the school, while routine tests were made on virtually 100 per cent of the group under consideration. For example, among 20,000 students, routine testing would be expected to reveal about forty cases of syphilis. Under the selective system 15 per cent, or 3,000 students, would be tested. At the rate of twenty cases in 10,000, only six cases would be expected, while forty actually would exist in the total student population.

Failure to detect the hidden manifestations of syphilis is frequent. Many infected persons do not know that they have syphilis and therefore do not request examination. The consequence is that testing by selective methods frequently results in failure to detect syphilis among college students. Even one case of syphilis undetected may take on the aspects of a serious control problem. If that one patient spreads the disease to others, it finally becomes the focal point of a small epidemic. Early diagnosis and treatment is therefore the answer not only for protection to the individual but for the entire student body and college community.

Public health authorities agree that control efforts, to be effective, must be focused on individuals in the age groups of most frequent exposure. College students form a potential section of this important group. Control measures applied here offer real hope that the general rate can be materially reduced.

Perhaps the most noteworthy fact of the survey is the indication that college administrative officers are fast approaching this point of view. In large measure they realize that there is necessity for fighting syphilis on every front, including the college campus. More than 40 per cent of the 515 institutions that cooperated in this study already have in operation facilities for testing students. Most of these, of course, are only on a selective basis, but twenty-three schools give tests as a routine to all entering students. In particular in the Negro schools, college administrators have recognized the problem and are taking vigorous steps toward its solution. Of the eleven Negro colleges reporting, nine give tests; of these, six test by the routine method—a very practical example of facing a problem squarely. Throughout the nation a trend toward more attention to this problem is evident. In many cases, programs have been called for by students themselves and their call has been heeded by many college authorities. These are healthy signs.

The facts seem to substantiate the belief that there is a syphilis problem in the colleges. Two questions yet remain: First, is syphilis in colleges predominately a medical or an educational problem? Second, what policies may be followed?

Comments on some questionnaires returned in this study held that even if as many as twenty cases in 10,000 could be shown to exist among the college population, the time and cost of testing the entire student body as a routine would not be worth while.

It must be remembered, however, that syphilis is a dangerous communicable disease, one which, if untreated, results frequently in cardiovascular disease, neurosyphilis and untimely death but which, if found and treated early, has more than an 80 per cent chance of satisfactory outcome.[5] And syphilis is a special problem of youth, with more than half of all cases being acquired before the age of 25 years.

Every state except Wyoming has a public health laboratory which should make serologic

5. In discussing this paper, Dr. Ruth E. Boynton of the University of Minnesota reported that four of the sixteen cases detected by routine serologic tests and under treatment at the Students' Health Service showed central nervous system symptoms.

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tests available to colleges. By utilizing this source the cost to the college of taking routine tests will be far overbalanced by the social value of discovering and bringing infectious cases under treatment. The survey cites as a typical example of this point of view the statement of one doctor that "the finding of a case of syphilis should be as worth while as the finding of a case of pulmonary tuberculosis." The inclusion of a blood test for syphilis in every routine physical examination, including examinations at matriculation, would be a substantial contribution to the good health of the student population.

COLLEGES SHOULD SET THE EXAMPLE

There exists a direct connection between the medical problem in the schools and colleges and in other youth groups. The connecting link is the educational and demonstrative value of college programs.

The actions and thoughts of college administrators and faculty command respect. Thus health programs in our institutions of higher learning which frankly and openly recognize syphilis as a communicable disease problem cannot help but have a salutary effect on public opinion. Colleges and college students "set the style," so to speak, in a number of respects. The college student is a member of an important social group. His actions are watched with keen interest by a large part of the populace. Widespread knowledge that college students are being systematically tested for syphilis as a routine part of their health examinations and that both faculty and student consider it as any other communicable disease will present a practical example of what should be done, in addition to delivering more blows at the old prudish state of mind.

The effect on college students of having this problem pointed out to them, of being given an opportunity to discuss it and its related problems and of seeing practical, diagnostic and control measures actually applied cannot be overemphasized. The college student is the leading citizen of tomorrow. Today most of the important posts are held by college men and women. So it is that the degree of understanding of health problems which the college student acquires will condition to a substantial extent his thinking on problems of community and public health in the future.

It is significant that the American Youth Commission of the American Council on Education in a study [6] about to be published says of the college student: "As a member of a special group in which society has invested heavily, he should become a leader of thought in those concepts by which family and community health may be preserved."

6. Diehl, H. S., and Shepard, C. E.: The Health of College Students: Preliminary Report to the American Youth Commission of the American Council on Education, Washington, D. C., May 1938.

It has been pointed out more than once after detailed and exhaustive investigations that our schools and colleges are not properly preparing students to live a healthy life. Only recently the magnitude of the problem was recognized by a large group of health and educational organizations which met to consider means of action. No one will claim that matters of sex education, of the venereal diseases and of preparation for marriage and parenthood have been more than touched on. In too many of these subjects there exists a yawning chasm in curriculums.

For at least one of these subjects the reasons militating against a frontal attack have been largely removed. Syphilis is now known to be a problem in the colleges. We know we can control it by applying modern public health principles. We know that, if we do, public opinion will support that action. And we must realize that colleges have a responsibility to take the lead in the field of health education. Certainly until colleges recognize subjects such as syphilis and other venereal diseases to be valid topics of instruction, little advance can be hoped for in secondary schools.

Instruction in the venereal diseases should be included in the usual course on the control of the communicable diseases. It should also have a proper place in any course dealing with sex education, hygiene and public health. Syphilis may well be used to illustrate a modern community health program with emphasis on health education.

Another phase of the educational program is coordination directly with student activities. Syphilis has dramatic interest which has not failed to arouse the imagination of many college students. During the past year and a half a number of effective and highly worth while campaigns have been undertaken by college students. As heads of school health services, college physicians have an opportunity to take advantage of such interest through the medium of student organizations and newspapers to a degree which is rarely possible in other young groups.

Frankly, during the past few months I have been much encouraged by the active interest in problems of health which has been demonstrated by young people. It gives me hope that the people on whom we must lean in the future are awake to problems of correct living. Students are beginning to realize that good health means essentially keeping well, not getting well. If we fail to encourage this concept, with its related implications, we have failed in a major responsibility.

THE PLAN FOR ACTION

Since there is a problem of syphilis control in the colleges, what can be done about it? I shall briefly review the alternatives.

As physicians we are aware of the efficacy of modern methods for the diagnosis and treatment of syphilis. Inclusion of a reliable system of finding syphilis quickly, easily and cheaply among a large student population is one of our major concerns. Fortunately the serologic dragnet answers that question. Its application requires little or no addition to the personnel required for the conduct of complete physical examinations on entering students. Cooperation with state or municipal laboratories in most instances will reduce laboratory costs to a negligible figure.

There are three points that should be stressed in handling positive cases. Obviously it is of extreme importance to be sure that the positive report is indicative of syphilis. Competent laboratories usually run several tests on blood specimens, but even their positive reports should be verified by physical examination and a second positive blood test in patients with latent syphilis.

Second, it is very important that the college physician see to it that treatment is begun and carried through. By whom the treatment is to be given is a matter for individual decision. In many cases it may be possible for the student to take treatments from his own physician and pay for them himself. If he cannot, however, the school must see that treatment from some source is forthcoming.

Closely linked to this problem of treatment is a third point: Positive reactions must not be allowed to be the basis of expulsion or other disciplinary action unless the patient refuses to carry through adequate treatment or persists in activity conducive to the spread of the disease. This was emphasized by the second National Conference on College Hygiene.

Syphilis in the college student is a challenge directed particularly to health administrators and educational leaders. Our nation will always face crises as great as or greater than any we have known in the past. It cannot afford to be burdened with men and women unfit to be leaders because of preventable disease.

CONCLUSIONS

1. Based on a sample of 78,388 tests, the prevalence of syphilis among white college students is 19.9 in 10,000. This figure compares closely with that of the corresponding age group in the general population.

2. In colleges for Negro students only the rate was 268 in 10,000 students. This rate likewise is comparable to that for the general Negro population of a corresponding age group.

3. The slightly lower rate among college women is also in line with the national figures.

4. Application of serologic tests on a selective basis results in failure to detect a large proportion of the infected student population. Routine testing of all students is definitely indicated.

5. The cooperation of state and municipal health departments should be sought in performing serologic tests without charge on specimens from college students. This arrangement will lower the cost of routine tests.

6. Routine serologic testing in colleges gives each student a definite lesson in syphilis control and serves to impress the importance of this phase of public health work on him in later life.

7. The action of college authorities in requiring routine serologic tests for syphilis among all students not only would be a substantial contribution to the health of the student population but would set an example which less fortunate young people might be more apt to follow.

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Comments and Reviews

CLINICAL INVESTIGATION

Abridgment of an address by Dr. George R. Minot, professor of medicine, Harvard University Medical School, Boston, presented at the dedication exercises of the Squibb Institute for Medical Research, New Brunswick, N. J., Oct. 11, 1938, and published in Science, Nov. 4, 1938.

Every patient who consults a doctor presents a problem for investigation before the best advice can be offered. Nowhere does a patient stand so good a chance as in a clinic where his disease is arousing scientific curiosity. Every practitioner, at the bedside, must constantly sharpen his powers of observation and judgment, and recognize that his education must be continued by his own strenuous mental effort. His curiosity to learn must never wane. Since medicine deals so essentially with human problems, the physician must constantly strive to broaden his outlook on life. This may be done by cultivating interests that often would be considered far removed from the practice of medicine.

There is no sharp line of demarcation between the practicing physician and the physician who makes it one of his duties to conduct clinical investigation. Indeed, the clinical investigator must be an able clinician, one who understands human beings and can act wisely for all aspects of a given individual. His training in investigative principles must be sound and he should have an ardent desire to seek for knowledge by scientific methods.

Clinical investigation may be undertaken wherever the physician has his headquarters if he trains himself to keep in mind the study of

problems; however, the establishment of appropriate space and opportunities for clinical investigation in large hospitals where the study of patients under controlled conditions can be undertaken seems especially wise. This permits investigators to be surrounded with a wealth of clinical material for study from which ideas can originate and allows the hospital to be a progressive modern institution and the patients to receive the very best treatment. It is of great advantage if the clinical investigator is in close contact with men working in a wide variety of scientific fields and especially in those disciplines closely related to clinical medicine, such as pharmacology, bacteriology, chemistry and biology. Mingling of such men offers opportunity for the free exchange of thought; indeed, this arrangement allows the ideas originating from the needs of the patient to be readily carried for elucidation to some laboratory of fundamental science, and knowledge obtained there to be applied in the clinic. For the cure and prevention of disease and the relief of pain the final test is on man himself, so that a clinical investigative unit needs to be a part of an institute for medical research or associated with one.

GREAT LABORATORIES UNNECESSARY

Clinical investigation does not necessarily require great laboratory set-ups. The patient is the center of the picture; wards are the salient feature of the clinical investigative unit. The technical apparatus required for intelligent observation and for the proper care of the patient is but a means to an end and is a relatively insignificant, though often to the casual observer the most impressive, feature of a clinical investigative unit. The most important possession, besides the sick people, is the recorded data collected with a view to obtaining a definite pattern and frequently ascertained by simple procedures, often entirely by the use of the intellect. From the trustworthy records of natural phenomena and of the actions of organisms under controlled experimental conditions, concepts concerning disease are formulated leading to the alleviation of man's ailments. The plodding worker often obtains a long record and masses of data which are sometimes thought to indicate good work. That is often far from the case, because his data may have been obtained without critical understanding. Quantity does not supplant quality. The individual with an aggressive mind can often by skilfully planned questions and observations in relatively small quantity elicit more significant information than is found in some voluminous records. The foundation of research work lies in the quality of the minds of the investigators and the freedom and tranquillity permitted for the use of their abilities. Free choice of problems and free choice to follow leads disclosed must be the privilege of the experienced investigator.

Although any physician may conduct clinical investigation and share his knowledge with his colleagues, the term clinical investigator is usually applied to a man who devotes a considerable amount of time to the study of clinical problems in organized clinical laboratories. Many men, who essentially never observe a patient, study numerous problems pertaining to the clinic, but such individuals are not clinical investigators.

A trained clinical investigator may approach problems in two different ways. In the first instance a clinician seeks tools through which to solve problems that originate in his mind at the bedside; such a man appreciates, for example, that, to supply the deficiency of the blood-clotting mechanism in hemophilia, chemical procedures should be utilized to discover something that might permanently alleviate the disease if given by injection each day. The second method of approach also is for a man with clinical training, but one who has acquired the use of tools, which he takes to the bedside to apply to problems suggested by the tools; for example, a man trained in the chemicophysical aspects of the clotting of blood, who seeks a patient to elucidate the mechanism of blood coagulation. The former is more truly the clinical investigator, and it is by the intellectual rather than by the technical method that he approaches problems. This does not imply that it is unwise for investigations of fundamental importance to proceed from morphologic, chemical or physiologic motivations without reference to the immediate needs of the clinic, for it is by the study of fundamental problems that most significant advances are made. Both types of clinical investigators have their place in the development of useful knowledge, but if aggregations of individuals, chosen only because they are acquainted with special technics, form the personnel of a clinical investigative unit the practical needs of clinical medicine are apt to be forgotten.

It is certainly an incorrect conception of research that it makes a man heartless or indifferent to human suffering. Many clinicians who have spent much time in investigation are unusually keen in their ability to appreciate and to treat the emotional disturbances of patients. In fact the clinical investigator is apt to be successful somewhat in proportion to his appreciation of the sick man as an individual. He must have the power to see straight, which is a rare gift. To see no more and no less than is actually before one, to see with one's reason as well as with one's perceptions—that is to be an observer and to read the book of nature aright. To note the resemblances of things one

to another may be an essential point in acquiring information. Factors often need study one at a time, yet it must not be forgotten that synthesis is essential in the formulation of final knowledge. The investigator must ponder on topics where emotions blend with cold reason and where the answer is dictated by the emotions, though it is largely formed by reason. Emotion is the driving force that arouses inquisitiveness, sustains interest and keeps the investigator at work through drudgery. Reason is the critical control that guides and checks progress. It is developed by long training in the scientific method. Emotion and reason are always mixed; one can only do one's best to use each for its serviceable purpose and avoid the usual mistake of allowing emotions to dominate one's judgment.

Whether a man is to undertake clinical investigative work does not depend on his precise occupation but lies in the man himself. Whoever undertakes clinical investigation must learn to recognize clinical facts, realize that intuition often guides, and that the patient's health must never be jeopardized. He must establish a detailed diagnosis without pothering over unessential details and proceed to action for every aspect of the patient and his case. This type of work has great educational value. Every physician must be trained to look at problems from more than one angle and be unwilling to confine himself to standardized procedures. By making frequent contacts with those especially studying medical problems, he will constantly imbibe knowledge. An understanding of the principles of scientific investigation aids him to judge critically, to appreciate the nature and significance of proper controls, and to evaluate the significance of the many communications published on medical topics.

Before a problem is intensively studied it is essential to become acquainted with previously acquired knowledge on the subject. Although subservience to the past makes stagnation, development of it is true progress. Science may render that which went before obsolete, but it builds on the past, constantly advancing new knowledge from the standpoint of the already known. Thus the investigator must consult authorities in large part by going to the library. Consulting colleagues is extremely helpful but does not alone take the place of reading what has been written on a subject. Conversation alone as the only basis for obtaining information can lead to confusion between "authority and the oracle," which is perilous to scientific work. A library is not merely a hall of books but a hall of records of human experience and thought, where one may learn the path along which man has toiled and may discover guiding and liberating influences for the future.

In clinical investigation the studies are often of a collective nature, as in the evaluation of clinical data or of new procedures, or in the correlations of chemical and pathologic information. Proper statistical methods must be employed and standard deviations and probable errors calculated. The descriptive discipline of nosography—the painting of accurate pictures of disease—is a useful guide to keep experimental procedures from going astray. This type of work may depend on the good fortune of observing several cases and not on planned investigation. There is need for more accurate work of this sort especially concerning initial symptoms and the natural history of long-lasting chronic conditions. Controlled observations of human pathologic physiology is the nature of many of the studies of the clinical investigator. The question of the origin or cause of disease is of unusual importance to study. Therapeutics, which is linked with pharmacology, is essentially experimental and will always have experimentation on man for its chief basis. The action of drugs always needs evaluation. The object, however, is to study the human body and not drugs per se.

CONTROL OF CONDITIONS

The control of experimental conditions in human beings is crude as compared with the utmost rigidity in the control of the worker in pure science, so that data of observations may be only qualitative or but crudely quantitative. One of the many variable factors depends on the fact that the human being has a soul and a highly organized nervous system. His emotional reactions, worries, jealousies and the like and his reactions to one or more persons not only can lead to illness but can affect the functions of organs. The medical-social, psychologic, economic and allied aspects of individuals can be investigated with profit. The field is a difficult one for reliable scientific study because it involves all the complexities of human life. Even so, a considerable fraction of the successful care and treatment of patients and the prevention of much illness is to be identified with the proper consideration of their medical-social problems. It is significant to realize that a prepared mind, well planned scientific observations and the taking of infinite pains will lead to success. Important original contributions often are made which require only simple technic and clinical wisdom.

The clinical investigator is not to be thought of as a lone worker or as a man sharply separated from other types of doctors. A close relationship with practitioners, specialists and laboratory investigators of many types is mutually beneficial. There are no sharp lines of demarcation between one medical interest and another or between medicine and a variety of disciplines. Cross fertilization at the border-

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lines of knowledge can serve to develop new information. The advancement of learning cannot be made in water-tight compartments.

More fundamental than the actual discoveries being made today is the preservation of the right to engage in research. Security and happiness have profound beneficial effects on the character of intellectual work. As time passes by we must always be alert to adapt ourselves to changes and realize that to understand the present we must look both toward the past and toward the future.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.

Positions in California for Student Intern and Senior Intern

The Personnel Board of the State of California desires to obtain the best qualified persons for student intern and senior intern to fill anticipated vacancies at the state institutions. Written examinations will not be required of applicants, rating being based on education, experience and fitness based on investigation and appraisal of scholastic records. The entrance requirements for the senior intern position is successful completion of the academic course of an approved medical school, including or supplemented by a one year internship; and for the student intern, successful completion of a four year academic course in an approved medical school or registration and attendance in the final year of such course. The senior will assist, under the supervision of a staff physician, with the medical work in a state institution for the mentally diseased or deficient. The entrance salary is $50 a month and maintenance for self and family, while those maintaining an efficiency rating of at least 80 per cent may receive annual salary increases of $10 until a maximum of $90 a month is reached. The entrance salary for the student intern position is $25 a month and maintenance, while those maintaining an efficiency rating of at least 80 per cent may receive annual salary increases of $5 until a maximum of $45 is reached. Applications may be filed at any time during 1939. If a candidate is found acceptable his name will be placed on the list eligible for employment, in accordance with his rating. Applications must be made on official application blanks, which may be obtained from the State Personnel Board at 1025 P Street, Sacramento; 108 State Building, San Francisco; 401 State Building, Los Angeles, or at the Civil Service Commission, Library Annex, Ninth and E streets, San Diego. All applicants must be citizens of the United States.

Denver Student Wins Harvard Prize

The Henry A. Christian Prize at Harvard University Medical School, Boston, has been awarded to Henry Swann II of Denver, a fourth year medical student. Mr. Swann graduated from Williams College in 1935. The prize, named in honor of Dr. Henry A. Christian, Hersey Professor of Theory and Practice of Physic, is awarded to "the student in the four year class who has displayed diligence and notable scholarship and offers promise for the future."

Interns and Residents Eligible for Prize

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons has announced that the annual Foundation Prize for this year will be $100. Those eligible include (1) interns, residents or graduate students in obstetrics, gynecology and abdominal surgery and (2) physicians (M.D. degree) who are actually practicing or teaching obstetrics, gynecology or abdominal surgery. Competing manuscripts must (1) be presented in triplicate under a nom-de-plume to the secretary of the association before June 1, (2) be limited to 5,000 words and such illustrations as are necessary for a clear exposition of the thesis, and (3) be typewritten (double spaced) on one side of the sheet, with ample margins. The successful thesis must be presented at the next annual (September) meeting of the association, without expense to the association and in conformity with its regulations. For details address Dr. James R. Bloss, secretary, 418 Eleventh Street, Huntington, W. Va.

Annual Lecture in Honor of Dr. Irons

The Kappa Chapter of the Nu Sigma Nu fraternity at Rush Medical College and at the University of Chicago have established an annual lectureship in honor of Dr. Ernest E. Irons. The first lecture was given March 8 at Billings Hospital by Dr. Evarts A. Graham of Barnes Hospital, St. Louis, on "Bronchogenic Carcinoma." Dr. Irons is clinical professor of medicine at Rush Medical College, from which school he graduated in 1903. He was the dean of Rush for many years.

Special Lectures at Duke University

A symposium on pneumonia was held at Duke Hospital, Durham, N. C., to which members of the medical profession and technicians were invited. Dr. Frederic M. Hanes, professor of medicine, Duke University School of Medicine, lectured on "Pneumonia in Adults" and Dr. Angus M. McBryde, assistant professor of pediatrics, on "Pneumonia in Infants and Children." Dr. Joseph Stokes Jr., associate professor of pediatrics, University of Pennsylvania School of Medicine, Philadelphia, lectured to the staff and students on "Viruses" February 8, and Dr. Arthur Bruce Gill, professor of orthopedic surgery, University of Pennsylvania School of Medicine, on "Open Reduction of Congenital Hip" February 14.

Outstanding Graduates of Temple University

The General Alumni Association of Temple University, Philadelphia, announced February 12 the names of ten outstanding graduates selected for conspicuous service to the university and its alumni association. Several different departments of the university are represented in this list, and Dr. James Marsh Alesbury, class of 1922, was the only selection this year representing the school of medicine. These certificates of award were presented at a founder's day dinner at the Bellevue Stratford Hotel, February 15, Leon A. Halpern, D.D.S., president of the General Alumni Association, making the presentations. The speakers were U. S. Senator James J. Davis, Federal Judge George A. Welsh and Dr. William T. Ellis, traveler and author.

Castellani Lectures at Yale

Sir Aldo Castellani, visiting professor of preventive medicine and public health in the Louisiana State University Medical Center, New Orleans, lectured at Yale University School of Medicine, New Haven, Conn., February 28, on "Medical Organization in Tropical Expeditions" and "Mycetes and Mycoses."

Intern Alumni Association Winter Clinic

The annual intern alumni association winter clinic at Providence Hospital, Detroit, was held Dec. 28-30, 1938. The guest lecturer was Dr. Walter Schiller, director of laboratories, Cook County Hospital, Chicago, and formerly of the University of Vienna. Among the subjects discussed were gynecology, physiology, pathology and endocrinology.

Indiana to Publish New Bulletin

The Indiana University School of Medicine, Indianapolis, published the first issue of its new *Quarterly Bulletin* under the editorship of Dr. Jacob K. Berman, assistant professor of surgery. It will publish proceedings of the medical center's weekly conferences, of the monthly meetings of the various departments, of the Medical Advisory Council, papers on medical pedagogy, reports of research and items of general interest. In addition to Dr. Berman and Dean Willis D. Gatch, the editorial board consists of the following: Drs. Ernest Rupel, Robert L. Glass, Edgar F. Kiser, Harold M. Trusler and Frederic W. Taylor, and James F. Glore, medical artist.

Central Teaching Clinic

The Intern Committee of the Des Moines Academy of Medicine and Polk County Medical Society has established a central teaching clinic which meets at Broadlawns Hospital, Des Moines, Friday mornings as a special feature in the interests of interns and practitioners. The February 3 instructor was Dr. Walter L. Bierring, and his subject, "Relation of Modern Public Health Service to Medical Practice"; February 10, Bernard C. Barnes, "Appendicitis"; February 17, Harry C. Willett, "Treatment of Syphilis," and February 24, Verl A. Ruth, "Dislocations of the Lower Spine."

National Board Questions in Medicine

Following are the questions used by the National Board of Medical Examiners in medicine in part two of the examination held Sept. 12-14, 1938:

Answer questions 1 and 2 and three of the remaining four. 1. What involvement of the nervous system is most commonly associated with pernicious anemia? What are the signs, symptoms and differential diagnostic features? 2. Contrast the physical signs of pneumothorax with those of massive collapse of the lung. 3. What are the signs and symptoms of acute morphine poisoning? Outline the treatment. 4. Discuss the etiology and describe the course of agranulocytopenia. 5. Discuss the etiology and diagnosis of abscess of the liver. 6. What is the significance of albuminuria?

Michigan Personals

Dr. George Adelbert Richardson has been appointed a fellow in otolaryngology at the University Hospital, Ann Arbor. Dr. Richardson graduated from Northwestern University Medical School, Chicago, in 1938. He has just completed his internship in the Evanston Hospital, Evanston, Ill.——Dr. Fred V. Rockwell, resident in neurology at the University Hospital, left January 1 to be assistant resident in psychiatry at the Payne Whitney Psychiatric Clinic, New York Hospital, New York. Dr. Wilford A. Risteen has been promoted to the position of resident; the assistant resident in neurology for the first six months of 1939 will be Dr. Leon Ferber, a graduate of the University of Tennessee College of Medicine, Memphis, in 1937. Dr. Ferber just completed an internship in the John Gaston Hospital of Memphis.——Dr. Robert Roy Rabalais, assistant resident in surgery at the University Hospital, has accepted a post as resident at the American Hospital at Neuilly, Paris, France.——Following a year at the University of Oxford on a Guggenheim fellowship, Dr. Lawrence Olin Brockway has been appointed assistant professor of chemistry at the University of Michigan.

Prize to First Year Medical Student

Beta Tau Mu, honorary premedical fraternity at Louisiana State University in Baton Rouge, offers a prize to the first year student in the school of medicine who took his premedical work at Baton Rouge and who made the highest grades in the first semester. The award is given in memory of Emile Jacob, who would have been a member of the 1942 class of medicine but who died last summer. This prize was awarded at a meeting February 28 to Dionisus V. Cacioppo.

New York Personals

Dr. Georg Strassmann, formerly professor extraordinarius for forensic and social medicine at the University of Breslau, Germany, has been appointed to the department of forensic medicine at the New York University College of Medicine, New York City.——Leonard J. Piccoli, Ph.D., professor of materia medica and physiology at Fordham College of Pharmacy, has been elected the first president of the American Association for the Advancement of Professional Pharmacy.——The following promotions have been announced at the New York Medical College and Flower Hospital: Dr. Loudon Corsan Reid has been promoted to the position of assistant professor of pathology, in charge of surgical pathology. Dr. David McCullagh Mayer has been promoted to the position of assistant professor of oral and plastic surgery, and chief of that service.

California's Seventy-First Anniversary

During the celebration of the seventy-first charter anniversary of the University of California, the medical school held alumni day clinics, March 22, including operative clinics by Dr. Howard C. Naffziger and the surgical staff, and by Dr. Frank W. Lynch and members of his staff in the department of obstetrics and gynecology. In the afternoon, senior students acted as guides to visitors on a tour of the medical center. There were demonstrations under the direction of Dr. William J. Kerr, professor of medicine, and Dr. Francis S. Smyth, professor of pediatrics.

New Courses in Orientation to Practice

The University of Minnesota School of Medicine, Minneapolis, is offering this spring to senior medical students for the first time a course known as orientation to practice. The series of lectures, beginning April 7 and closing June 16, include the ethics of the practice of medicine, opportunities in and preparation for practice, management of public and private patients, starting the practice of medicine, malpractice, the physician in court, medical care of the indigent and low income groups, medical organization, and quackery, fads, cults and "patent medicines." The lecturers are H. S. Diehl, A. W. Adson, S. M. White, O. J. Hagen, W. A. O'Brien, Ray Scallen, R. E. Scammon, C. B. Wright and Judge Paul Carroll.

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Ludvig Hektoen Lecture

Dr. Elexious T. Bell, professor of pathology, University of Minnesota Medical School, Minneapolis, presented the fifteenth Ludvig Hektoen Lecture of the Frank Billings Foundation at the Palmer House, Chicago, February 24, on "The Pathogenesis of Glomerulonephritis Including Lipoid Nephrosis."

New Teachers at South Carolina

Among the new members of the faculty of the Medical College of the State of South Carolina, Charleston, 1938-1939, are the following:

Dr. Seaton Sailer, department of pathology.
Dr. Marcus Edward Cox, department of pathology.
Dr. James Marshall McFadden Jr., department of pathology.
Dr. Soloman Carl Werch, department of pharmacology and materia medica.

Course on Medical Writing and Use of the Library

The dean of the School of Medicine of Louisiana State University, New Orleans, has announced for the first time a series of lectures on medical writing and the use of the library for first year students. The course begins with an analysis of study habits. A later lecture deals with the principles of medical nomenclature, with special reference to etymology and correct usage. The opening lecture of the second group concerns the historical development of medical libraries. Other lectures deal with the use of indexes, the selection of references and the most important periodic literature. Practical instruction is given in the library, where the students, in small groups, are shown the location of indexes, journals, textbooks and systems.

Massachusetts Personals

The faculty of medicine of Madrid University recently granted the degree of Doctor Honoris Causa to Dr. Walter B. Cannon of Harvard University Medical School, Boston, and president-elect of the American Association for the Advancement of Science. Dr. Cannon is co-chairman of the Medical Bureau and North American Committee to Aid Spanish Democracy. ——Dr. John C. Whitehorn, director of laboratories at McLean Hospital, Belmont, has been appointed professor of psychiatry in the Washington University School of Medicine, St. Louis.——Benjamin Kropp, Ph.D., has resigned as instructor in anatomy and research fellow in obstetrics at the Harvard Medical School to become lecturer in embryology at Queens University Medical School, Kingston, Ont.——Dr. Elliott C. Cutler, Moseley professor of surgery at Harvard University and chief surgeon at the Peter Bent Brigham Hospital, Boston, was awarded an honorary doctorate by the University of Strasbourg, France, Nov. 22, 1938.

Dormitory Named in Honor of Victor C. Vaughan

At the University of Michigan Medical School, Ann Arbor, a new dormitory for medical students is being erected and will be designated the Victor C. Vaughan House, in honor of the late Dr. Vaughan, who was dean of the medical school from 1891 to 1921.

Assistant Dean Appointed

Dr. Franklin E. Walton was appointed assistant dean of the Washington University School of Medicine, St. Louis, January 28. Dr. Walton was graduated from Washington University School of Medicine in 1927, served on the resident surgical staff of Barnes Hospital for three years and was resident surgeon for two years. He was appointed an assistant in surgery on the staff of the medical school in 1928 and was made an instructor in 1937. Dr. Walton will work with undergraduate medical students and act as adviser to students seeking internships after graduation.

Canada Personals

Prof. Guy F. Marrian, D.Sc., of the University of Toronto, has been appointed to the chair of chemistry in relation to medicine at the University of Glasgow, to succeed Professor George Barger, who now holds the chair of chemistry.——Dr. William Boyd, professor of pathology and bacteriology in the University of Toronto Faculty of Medicine, gave a Mayo Foundation lecture Dec. 1, 1938, at Rochester, Minn., on "Some Reasons for the Recent Increase in Bronchial Carcinoma."

Pennsylvania State Board Questions

The following list of questions in medicine and surgery were submitted by the Pennsylvania State Board of Medical Education and Licensure at the examination in Harrisburg, January 4:

DIAGNOSIS, SYMPTOMATOLOGY, MEDICAL JURISPRUDENCE AND TOXICOLOGY

1. What symptoms would lead you to suspect the presence of Addison's disease.
2. Describe the symptoms and outline the diagnosis of acute lobar pneumonia.
3. Discuss the diagnostic significance of vomiting and name some of the diseases outside the gastrointestinal tract in which this symptom is observed.
4. What are the criteria for the diagnosis of progressive pernicious anemia? Give the laboratory findings.
5. What are the symptoms of diabetic acidosis?
6. What are the symptoms of vitamin B deficiency?
7. In the case of a patient suffering from typhoid fever, what are the symptoms of perforation of an intestinal ulcer?
8. Describe the signs and symptoms and outline the diagnosis of acute leukemia.
9. In the event that a therapeutic abortion is indicated, what precautions must you take to keep within the law and protect yourself from prosecution in performing the same?
10. What are the symptoms of phosphorus poisoning?

Professor Appointed

Dr. Donald Ewen Cameron, recently senior research psychiatrist at Worcester State Hospital, Worcester, Mass., has been appointed professor of neurology and psychiatary at Albany Medical College, Albany, N. Y.

Pennsylvania Provost Retires

Announcement of the retirement of Josiah H. Penniman, L.H.D., provost and John Welsh centennial professor of history and English of the University of Pennsylvania, Philadelphia, was made by Thomas S. Gates, LL.D., president of the university. Beginning June 30, Dr. Penniman will hold the title of provost emeritus and will be succeeded as provost by George William McClelland, Ph.D., vice president of the university in charge of undergraduate schools and professor of English.

New Nursing Courses at Temple

The School of Nursing of Temple University, Philadelphia, has announced a three year course leading to a diploma in nursing, a combined university and professional training covering five years leading to bachelor of science in nursing and a program for graduate nurses who desire to prepare for supervisory, teaching and administrative positions in nursing schools. The dean of the School of Nursing is Miss Beatrice E. Ritter.

Appointments at Harvard

Harvard University has announced the following appointments to the teaching and research staff of Harvard Medical School for the current academic year:

Lucie Adelsberger of Berlin, Germany, instructor in bacteriology; M.D. Friedrich-Alexanders-University, Erlangen, 1923.

Georg Schlomer of Berlin, Germany, instructor in psychiatry; M.D. Munich, 1910.

Charles R. Atwell, Boston, instructor in psychology; A.M. Harvard, 1931.

George M. Wyatt, Wilmore, Ky., instructor in roentgenology; M.D. Western Reserve, 1933.

Rupert A. Chittick, Belmont, Mass., assistant in psychiatry; M.D. Harvard, 1929.

Thomas Colver, London, research fellow in medicine; M.R.C.P. London, 1935.

Kenneth M.A. Perry, London, research fellow in medicine; M.R.C.P. London, 1937.

Rulon W. Rawson, Chicago, research fellow in medicine and assistant physician to the Collis P. Huntington Memorial Hospital; M.D. Northwestern, 1938.

From Oct. 1, 1938, to July 1, 1939:

Francis R. Dieuaide, of Peiping Union Medical College, China, research associate in biologic chemistry; M.D. Johns Hopkins, 1920.

From Nov. 1, 1938, to Sept. 1, 1939:

Thomas R. C. Fraser as research fellow in medicine; D.P.M. London '37.

Alfredo Lanari, Buenos Aires, as research fellow in physiology; M.D. Buenos Aires, '34.

Eric K. Cruickshank, Aberdeen, Scotland, as research fellow in surgery; M.B., Ch.B. Aberdeen University '37.

Maximilian G. Verlot, Ghent, Belgium, as research fellow in surgery; M.D. Ghent '35.

From Jan. 1 to Sept. 1, 1939:

Adolph Meltzer, Boston, as assistant in surgery; M.D. Cornell '34.

Maurice H. Greenhill, Worcester, Mass., as research fellow in psychiatry; M.D. University of Chicago '36.

School of Public Health, From Nov. 1, 1938 to Sept. 1, 1939:

Nathan Gorin, Boston, as assistant in child hygiene; M.D. Boston University '17.

Memorial Scholarships at North Carolina

A fund of $20,400 has been established at the University of North Carolina by an unannounced donor to provide four scholarships in memory of the late Dr. Mark R. Braswell, Rocky Mount. Dr. Braswell graduated from the University of Maryland in 1886 and practiced medicine in Rocky Mount until 1911, when he retired to devote his time to farming and other interests. He died in 1937.

Tennessee Personal

Dr. Fred L. Moore, Bristol, health officer of Sullivan County for the past ten years, has been appointed associate professor of preventive medicine at Long Island College of Medicine, Brooklyn. Dr. Moore is a graduate of Dalhousie University Faculty of Medicine, Halifax, N. S., class of 1924. Dr. J. W. Erwin, Nashville, health officer of Washington County, has been appointed to succeed Dr. Moore.

Eastman Memorial Lecture at Rochester

Dr. George L. Streeter, director, department of embryology, Carnegie Institution of Washington, Baltimore, delivered the Eastman Memorial Lecture at the University of Rochester (N. Y.) School of Medicine, February 10. His subject was "The Rise of the Three-Germ-Layer Theory in Embryology and Some of Its Limitations."

Founder's Day at Woman's College

A three day program of discussion on "Current Medical Problems Confronting the General Practitioner" marked the observance of the eighty-ninth anniversary of the founding of the Woman's Medical College of Pennsylvania March 9-11. Subjects listed on the program were "Sulfanilamide and Its Clinical Value," "Barbiturates and Sedatives," "Responsibility of the General Practitioner in Cancer of the Cervix, Rectum and Breast," "Current Views on the Management of Diabetes" and "Everyday Problems in Allergy," discussed by members of the faculty and staff. At a founder's day luncheon March 11, alumnae were the guests of the college.

Oklahoma Personal

Donald B. McMullen, D.Sc., formerly of Monmouth College, Monmouth, Ill., was recently appointed assistant professor of bacteriology at the University of Oklahoma School of Medicine, Oklahoma City, instead of professor of bacteriology, as stated in THE JOURNAL Oct. 29, 1938, page 1716.

Alabama Personal

Dr. James S. McLester, Birmingham, was the guest speaker at the annual conclave of Pre-Medics at the University of Alabama chapter of Alpha Epsilon Delta, February 3. His topic was "Personal Observation of the Practice of Medicine in Europe and Russia."

Tuberculin, Wassermann and Malaria Tests Offered to Students

Alpha Epsilon Delta, honorary premedical fraternity, recently sponsored a program offering tuberculin tests to the entire student body and Wassermann and malaria tests to new students at Millsaps College. Dr. John W. Dugger, Jackson, Miss., director of industrial hygiene for Mississippi, gave a talk on "Tuberculosis, Its Causes, Importance and Methods of Controlling It." Dr. Dolph V. Galloway, Meridian, supervisor of syphilis control for Mississippi, gave a talk of corresponding nature with regard to syphilis.

Ohio State Board Questions in Chemistry

The following questions were used by the State Medical Board of Ohio in the examinations for licensure Dec. 7-9, 1938, at Columbus:

1. Discuss the chemistry of bone. What factors influence its calcification?
2. State the general properties and mention the compound elements of protein.
3. Give detail of testing suspected stains for blood. Explain the chemistry of any reaction used.
4. (*a*) What is normal *p*H in urine compatible with health? (*b*) How can the *p*H value of urine be determined?
5. Give chemical antidote for poisoning from the following:

morphine	corrosive sublimate
carbonic acid	arsenic

Maryland Personal

Dr. Norman Cameron, associate in psychiatry, Johns Hopkins University School of Medicine, Baltimore, has resigned to take charge of the laboratory for experimental psychology and psychopathology at the Payne Whitney Clinic of the New York Hospital, New York City.

Fund to Aid Worthy Students

The University of Cincinnati recently received a bequest of $10,000 from the estate of Mrs. Ida B. Rulison to establish a fund bearing her name to aid "needy and worthy medical students in such manner as the board of trustees of said university shall in their discretion deem most advisable for scholarships."

Missouri Personal

Dr. Charles H. Neilson, associate dean of the St. Louis University School of Medicine, has been appointed to the state board of health by Governor Stark for a term ending Dec. 12, 1942.

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